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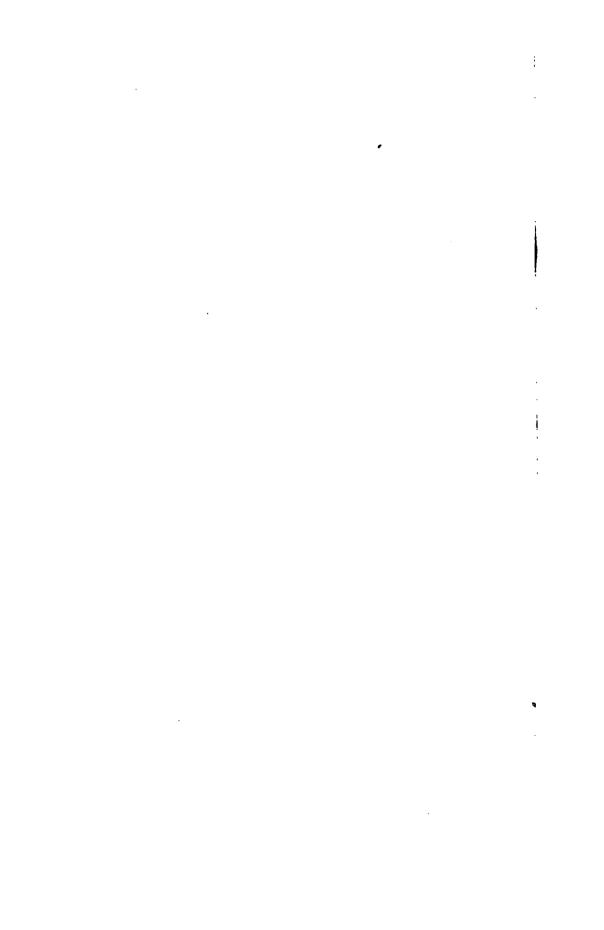
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# GEOLOGICAL SURVEY

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# UNITED STATES GEOLOGICAL SURVEY

CHARLES D. WALCOTT, DIRECTOR

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BIBLIOGRAPHIC INDEX

NORTH AMERICAN CARBONIFEROUS INVERTEBRATES

STUART WELLER.



WASHINGTON GOVERNMENT PRINTING OFFICE 1898

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# CONTENTS.

Preface	Page.
Part I:	
Chronological catalogue of papers containing descriptions and illustrations of North American Carboniferous invertebrates	40
General summary of classes and genera  Part II:  Bibliographic list of genera and species of North American Carboniferous	43
invertebrates, arranged alphabetically	51



# PREFACE.

This bibliographic list was begun some years ago to supply a want felt by the compiler in his own researches among the Carboniferous faunas of North America. It was at first intended for private use only, but as it became more and more nearly complete and its usefulness became more and more apparent, it was decided to put it in shape for publication.

Like all works of its kind, this list is not perfect. Errors and omissions will doubtless be discovered, and those making these discoveries will confer a favor upon the compiler by reporting them to him. The most confusing questions which have arisen during the progress of the work have been in regard to the synonymy. No attempt has been made to eliminate all synonyms; this could be accomplished only through a complete revision of all the genera in all the classes of organisms represented. In so far as special groups have been studied by competent authorities their identifications of good species and synonyms have been followed. For the Crinoidea, the work of Wachsmuth and Springer has been the standard; for the Brachiopoda, Hall and Clarke, and Schuchert's Synopsis of American Fossil Brachiopoda: for the Cephalopoda, the work of Hyatt, so far as possible; and for the Bryozoa, the work of Ulrich. Except for some possible accidental omissions, references to all publications to January 1, 1898, have been included. References of species to their proper genera, not accompanied by descriptions or illustrations, have ordinarily been omitted, and for these the student is referred to the special works of the authors above mentioned.

In some groups many names have been recently added to our literature, and these have been included in the list, as published by their respective authors, though some of them will doubtless prove to be synonyms. Many species published by the earlier authors have never been properly illustrated, and as the descriptions of these species are often inadequate, it is next to impossible to identify many of them with certainty. These names have all been included in the list at their proper places, though many of them, doubtless, will finally be eliminated.

The first part of the bulletin is devoted to a list of the titles of papers from which references have been obtained. These are first arranged chronologically, followed by an alphabetical list of the authors, the years in which his publications have appeared being placed after each author's name. Following these lists is a tabulation of the genera of each class, with the number of species in each genus.

8 PREFACE.

The second part of the bulletin is the bibliographic list proper, in which all North American Carboniferous genera of invertebrates have been arranged alphabetically, with the species arranged alphabetically under each genus. In the printing of this list a distinction is made in the type used for the species which have been illustrated and those which have not. All references which have not been actually examined are designated by an asterisk.

Special acknowledgment is due Mr. C. D. Walcott, who has furnished the means of publication of the list as a bulletin of the United States Geological Survey. To Mr. E. M. Kindle, of New Haven, Connecticut, acknowledgments are due for looking up some references in the Yale University library. The following gentlemen rendered aid by the loan of rare papers or by the donation of their own publications: Prof. H. S. Williams, Mr. Frank Springer, Prof. S. Calvin, Mr. W. F. E. Gurley, Capt. A. W. Vogdes, Mr. Gilbert van Ingen, Mr. R. R. Rowley, Dr. C. R. Keyes, Mr. E. O. Ulrich, and Sir J. W. Dawson. Acknowledgments are also due to the librarians of the Field Columbian Museum and of the Chicago Academy of Sciences, who have kindly permitted the compiler to have access to the books in their care.

S. W.

THE UNIVERSITY OF CHICAGO, February 4, 1898.

# A BIBLIOGRAPHIC INDEX OF NORTH AMERICAN CARBONIFEROUS INVERTEBRATES.

By STUART WELLER.

# PART I.

CHRONOLOGICAL CATALOGUE OF PAPERS CONTAINING DESCRIPTIONS AND ILLUSTRATIONS OF NORTH AMERICAN CARBONIFEROUS INVERTEBRATES.

## 1823.

**SAY** (T.). Paleontological notes. (Footnotes in Long's Exped. to Rocky Mts., Vol. I, pp. 84, 85, 106, 107, 146-152.)

#### 1825.

SAY (T.). On two genera and several new species of Crinoidea. (Jour. Acad. Nat. Sci. Phil. (1), Vol. IV, pp. 289-296.)

#### 1835.

- CONRAD (T. A.). Description of five new species of fossil shells in the collection presented by Mr. Edward Miller to the Geological Society. (Trans. Geol. Soc. Penn., Vol. I, pt. 2, pp. 267-270, Pl. 12.)
- **TROOST** (G.). On the *Pentremites rheinwardtii*, a new fossil; with remarks on the genus Pentremites (Say) and its geognostic position in the States of Tennessee, Alabama, and Kentucky. (Trans. Geol. Soc. Penn., Vol. I, pt. 2, pp. 224-231, Pl. 10.)

#### 1836.

MORTON (8. G.). Notice and description of the organic remains embraced in the preceding paper. Appendix to paper entitled "Observations on the bituminous coal deposits of the valley of the Ohio and the accompanying rock strata, with notices of the fossil organic remains and the relics of vegetable and animal bodies, illustrated by a geological map, by numerous drawings of plants and shells, and by views of interesting scenery; by Dr. S. P. Hildreth, of Marietta, Ohio." (Am. Jour. Sci. (1), Vol. XXIX, pp. 149-154.)

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#### 1838.

SHEPARD (C. D.). Geology of Upper Illinois. (Am. Jour. Sci. (1), Vol. XXXIV, pp. 134-161.)

## 1842.

CONRAD (T. A.). Observations on the Silurian and Devonian systems of the United States, with descriptions of new organic remains. (Jour. Acad. Nat. Sci. Phil. (1), Vol. VIII, pp. 228-280, Pls. 12-17.)

# 1843.

CONRAD (T. A.). Observations on the lead-bearing limestone of Wisconsin, and descriptions of a new genus of trilobites and fifteen new Silurian fossils. (Proc. Acad. Nat. Sci. Phil., pp. 329-335.)

#### 1844.

- CONRAD (T. A.). Descriptions of eight new fossil shells of the United States. (Proc. Acad. Nat. Sci. Phil., pp. 173-175.)
- owen (D. D.). Descriptions and figures of some organic remains supposed to be new. (Rep. Geol. Expl. of part of Wis., Iowa, and Minn. Appendix, pp. 69-86, Pls. 11-18.)

#### 1846.

- CONRAD (T. A.). Descriptions of new species of fossil and recent shells and corals. (Proc. Acad. Nat. Sci. Phil., pp. 19-27, Pl. 1.)
- NORWOOD (J. G.) and OWEN (D. D.). Description of a remarkable fossil echinoderm, from the limestone formation of St. Louis, Missouri. (Am. Jour. Sci. (2), Vol. II, pp. 225-228.)

# 1847.

- KONINCK (L. De). Recherches sur les animaux fossiles. Première partie. Monographie des genres Productus et Chonetes. (Pp. 1-246, Pls. 1-20.)
- YANDELL (L. P.) and SHUMARD (B. F.). Contributions to the geology of Kentucky. (Pp. 1-36, Pl. 1.)

#### 1848.

CHRISTY (D.). Letters on Geology; being a series of communications originally addressed to Dr. John Lock, of Cincinnati, giving an outline of the geology of the west and southwest, together with an essay on the erratic rocks of North America, addressed to M. De Verneuil. Illustrated by geological sections and engravings of some rare fossils. (Pp. 1-72, 1-11, Pls. 1-5, Sections 1-3.)

### 1850.

OWEN (D. D.) and SHUMARD (B. F.). Descriptions of fifteen new species of Crinoidea from the Subcarboniferous limestones of Iowa, Wisconsin, and Minnesota, in the years 1848-49. (Jour. Acad. Nat. Sci. Phil. (2), Vol. II, pp. 57-70, Pl. 7.)

MILNE-EDWARDS and HAIME. Monographie des polypiers fossiles des terrains palæozoïques, précedée d'un tableau général de la classification des polypes. (Archives du Muséum d'Histoire Naturelle, tom. V, pp. 1-502, Pls. 1-20.)

#### 1852

- HALL (J.). Notes upon some of the fossils collected on the route from the Missouri River to the Great Salt Lake, and in the vicinity of the latter place, by the expedition under the command of Capt. Howard Stansbury, T. E. (Stansbury's Expl. and Surv. Vall. Gt. Salt Lake Utah, App. E., pp. 407-414, Pls. 1-4.)
- OWEN (D. D.). Description of new and imperfectly known genera and species of organic remains, collected during the geological surveys of Wisconsin, Iowa, and Minnesota. (Owen's Geol. Rep. of Wis., Iowa, and Minn., pp. 573-587, Pls. 1-5, 7-8 A.)
- and SHUMARD (B. F.). Description of one new genus and twenty-two new species of Crinoidea, from the Subcarboniferous limestone of Iowa. (Owen's Geol. Rep. of Wis., Iowa, and Minn., pp. 587-598, Pls. 5 A-5 B.)
- ———. Descriptions of seven new species of Crinoidea from the Subcarboniferous limestone of Iowa and Illinois. (Jour. Acad. Nat. Sci. Phil. (2), Vol. II, pp. 89-94, Pl. 11.)
- **EDEMER** (F.). Die Kreidebildungen von Texas und ihre organischen Einschlüsse. (Pp. 1-100, Pls. 1-11.)

#### 1853.

LEA (I.). On some new fossil molluscs in the Carboniferous slates of the anthracite seams of the Wilkesbarre Coal Formation. (Jour. Acad. Nat. Sci. Phil. (2), Vol. II, pp. 203-206, Pl. 20.)

#### 1884.

- CASSEDAY (S. A.). Beschreibung eines neuen Crinoidengeschlechts aus dem Kohlenkalkstein Nordamerikas. (Zeitschrift d. Deutsch. Geol. Ges., Bd. VI, pp. 237-242, Pl. 2.)
- DAWSON (J. W.). Acadian Geology. The geological structure, organic remains, and mineral resources of Nova Scotia, New Brunswick, and Prince Edwards Island. First edition.
- SHUMARD (B. F.). Description of the species of Carboniferous and Cretaceous fossils collected. (Marcy's Rep. of the U. S. Expl. of the Red River of Louisiana, App. E, pp. 173-185, Pls. 1-6.)

#### 1855.

LEA (L). Description of a new mollusk from the Red Sandstone near Pottsville, Pennsylvania. (Proc. Acad. Nat. Sci. Phil., pp. 340-341, Pl. 4.)

- NORWOOD (J. G.) and PRATTEN (H.). Notice of the Producti found in the Western States and Territories, with descriptions of twelve new species. (Jour. Acad. Nat. Sci. Phil. (2), Vol. III, pp. 5-22, Pls. 1-2.)
- States and Territories, with descriptions of eleven new species. (Jour. Acad. Nat. Sci. Phil. (2), Vol. III, pp. 23-32, Pl. 2.)
- Western States, belonging to the genera Spirifer, Bellerophon, Pleurotomaria, Macrocheilus, Natica, and Loxonema, with descriptions of eight new characteristic species. (Jour. Acad. Nat. Sci. Phil. (2), Vol. III, pp. 71-77, Pl. 9.)
- **SALTER** (J. W.). Account of the Arctic Carboniferous fossils. (In the "Last of the Arctic Voyages," by Sir Edward Belcher, C. B., Vol. II, pp. 377-389, Pl. 36.)
- SCHIEL (J.). List and description of organic remains collected during the exploration of the Central Pacific Railroad line. (Pac. R. Rep., Vol. II, pp. 108-109, Pls. 1-4.)
- SHUMARD (B. F.). Description of new species of organic remains. (First and Second Ann. Reps. of the Geol. Surv. Mo., by G. C. Swallow, pt. 2, pp. 185-208, Pls. A-C.)
- YANDELL (L. P.). Description of a new genus of Crinoidea. (Am. Jour. Sci. (2), Vol. XX, pp. 135-137.)

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- HALL (J.). Observations on the genus Archimedes, or Fenestella, with description of species, etc. (Proc. Am. Ass. Adv. Sci., Vol. X, pp. 176-180.)
- LYON (8. S.). Description of new species of organic remains. (Ky. Geol. Surv., Vol. III, pp. 467-498, Pls. 1-5.)
- PROUT (H. A.). Description of a new species of Productus from the Carboniferous limestone of St. Louis. (Trans. St. Louis Acad. Sci., Vol. I, pp. 43-45, Pl. 2.)

- SHUMARD (B. F.). Description of new fossil Crinoidea from the Paleozoic rocks of the western and southern portions of the United States. (Trans. St. Louis Acad. Sci., Vol. I, pp. 71-80, Pl. 1.)
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- **HALL** (J.). Paleontology of Iowa. (Geol. Surv. Iowa, Vol. I, pt. 2, pp. 473-724, Pls. 1-29.)
- MARCOU (J.). Paleontology. (Geology of North America; with two reports on the prairies of Arkansas and Texas, the Rocky Mountains of New Mexico, and the Sierra Nevada of California. Chap. III, pp. 32-53, Pls. 1-7.)
- MREK (F. B.) and HAYDEN (F. V.). Description of new organic remains from northeastern Kansas, indicating the existence of Permian rocks in that Territory. (Trans. Albany Inst. Vol. IV, pp. 73-88.)
- PROUT (H. A.). Description of new species of Bryozoa from Texas and New Mexico, collected by Dr. George G. Shumard, geologist of the United States expedition for boring artesian wells along the 32d parallel, under the direction of Capt. John Pope, U. S. Corps of Top. Eng. (Trans. St. Louis Acad. Sci., Vol. I, pp. 228-235.)
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- SHUMARD (B. F.). Descriptions of new species of Blastoidea from the Paleozoic rocks of the Western States, with some observations on the structure of the summit of the genus Pentremites. (Trans. St. Louis Acad. Sci., Vol. I, pp. 238-248, Pl. 9.)
- and **SWALLOW** (G. C.). Descriptions of new fossils from the Coal Measures of Missouri and Kansas. (Trans. St. Louis Acad. Sci., Vol. I, pp. 198-227.)
- STEVENS (R. P.). Description of new Carboniferous fossils from the Appalachian, Illinois, and Michigan coal fields. (Am. Jour. Sci. (2), Vol. XXV, pp. 258-265.)
- **SWALLOW** (G. C.) and **HAWN** (F.). The rocks of Kansas. (Trans. St. Louis Acad. Sci., Vol. I, pp. 173-197.)

- GABB (W. M.). Descriptions of two new species of Carboniferous fossils, brought from Fort Belknap, Texas, by Dr. Moore. (Proc. Acad. Nat. Sci. Phil., p. 297.)
- HAUGHTON (8.). Geological account of the Arctic Archipelago, drawn up principally from the specimens collected by Capt. F. L. McClintock, R. N., from 1849 to 1859. (Appendix to "The Voyage of the Fox in the Arctic Seas," by Capt. F. L. McClintock; also, Jour. Geol. Soc. Dublin, Vol. I, pp. 196-213.)
- LYON (S. S.) and CASSEDAY (S. A.). Description of nine new species of Crinoidea from the Subcarboniferous rocks of Indiana and Kentucky. (Am. Jour. Sci. (2), Vol. XXVIII, pp. 233-246.)
- MREK (F. B.) and HAYDEN (F. V.). Geological explorations in Kansas Territory. (Proc. Acad. Nat. Sci. Phil., pp. 8-30.)
- PROUT (H. A.). Third series of descriptions of Bryozoa from the Paleozoic rocks of the Western States and Territories. (Trans. St. Louis Acad. Sci., Vol. I, pp. 443–452, Pls. 15–18.)
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- SHUMARD (B. F.). Notice of fossils from the Permian strata of Texas and New Mexico, obtained by the United States expedition under Capt. John Pope for boring artesian wells along the 32d parallel, with descriptions of new species from these strata and the Coal Measures of that region. (Trans. St. Louis Acad. Sci., Vol. I, pp. 387-402, Pl. 1.)

- CONRAD (T.A.) and GABB (W. M.). Illustrations of some fossils described in the Proceedings of the Academy of Natural Science. (Proc. Acad. Nat. Sci. Phil., p. 55, Pl. 1.)
- DAWSON (J. W.). On a terrestrial mollusk, a chilognathous myriapod, and some new species of reptiles, from the Coal formation of Nova Scotia. (Quart. Jour. Geol. Soc. Lond., Vol. XVI, pp. 268-277, Pls. 14-17.)
- HALL (J.). Notes and observations upon the fossils of the Goniatite limestone in the Marcellus shale of the Hamilton Group, in the eastern and central parts of the State of New York, and those of the Goniatite beds of Rockford, Indiana; with some analogous forms from the Hamilton Group proper. (13th Rep. N. Y. State Cab. Nat. Hist., pp. 95-112; also supplementary note on p. 125.)
- Observations upon a new genus of Crinoidea; Cheirocrinus. (13th Rep. N. Y. State Cab. Nat. Hist., pp. 121-124.)

- LESQUEREUX (L.). Description of new species of fossil plants collected in the shales overlying the subconglomerate coal of Arkansas. (2d Rep. Geol. Surv. Ark., pp. 308-314, Pls. 1-6.)
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- McCHESNEY (J. H.). Descriptions of new species of fossils from the Palæozoic rocks of the Western States. (Pp. 1-76.)
- MKEK (F. B.). Descriptions of new fossil remains collected in Nebraska and Utah, by the exploring expeditions under the command of Capt. J. H. Simpson, of U. S. Topographical Engineers [extracted from the officer's forthcoming report]. (Proc. Acad. Nat. Sci. Phil., pp. 308-315.)
- and HAYDEN (F. V.). Descriptions of new organic remains from the Tertiary, Cretaceous, and Jurassic rocks of Nebraska. (Proc. Acad. Nat. Sci. Phil., pp. 175-185.)
- and WORTHEN (A H.). Descriptions of new Carboniferous fossils from Illinois and other Western States. (Proc. Acad. Nat. Sci. Phil., pp. 447-472.)
- dea from the Carboniferous rocks of Illinois, and other Western States. (Proc. Acad. Nat. Sci. Phil., pp. 379-397.)
- MILNE-EDWARDS (H.). Histoire naturelle des Coralliaires ou Polypes proprement dits, Vol. III, pp. 1-560.
- PROUT (H. A.). Fourth series of descriptions of Bryozoa from the Palæozoic rocks of the Western States and Territories. (Trans. St. Louis Acad. Sci., Vol. I, pp. 571-581.)
- SHUMARD (B. F.). Description of five new species of Gasteropoda from the Coal Measures, and a Brachiopod from the Potsdam sand-stone of Texas. (Trans. St. Louis. Acad. Sci., Vol. I, pp. 624-627.)
- **SWALLOW** (G. C.). Descriptions of new fossils from the Carboniferous and Devonian rocks of Missouri. (Trans. St. Louis Acad. Sci., Vol. I, pp. 635-660.)
- WHITE (C. A.). Observations upon the Geology and Paleontology of Burlington, Iowa, and its vicinity. (Jour. Bost. Soc. Nat. Hist., Vol. VII, pp. 209-235.)
- WORTHEN (A. H.). Notice of a new species of Platycrinus and other fossils, from the Mountain limestone of Illinois and Iowa; being an extract from the Second Annual Report of the Illinois Geological Survey. (Trans. St. Louis Acad. Sci., Vol. I, pp. 569-571.)

- GABB (W. M.). Descriptions of new species of American Tertiary fossils and a new Carboniferous cephalopod from Texas. (Proc. Acad. Nat. Sci. Phil., pp. 367-372.)
- HALL (J.). Descriptions of new species of Crinoidea and other fossils, from the Carboniferous rocks of the Mississippi Valley. (Pp. 1-18.)
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- McCHESNEY (J. H.). Descriptions of new fossils from the Palæozoic rocks of the Western States, from the transactions of the Chicago Academy of Sciences, October 11, 1859. Contributed by J. H. McChesney. Extract No. 2. (Pp. 77-96.)
- MEEK (F. B.) and WORTHEN (A. H.). Descriptions of new Palæozoic fossils from Illinois and Iowa. (Proc. Acad. Nat. Sci. Phil., pp. 128-148.)
- NEWBERRY (J. S.). Paleontology. (Chap. 11 of Lieutenant Ives's Report on the Colorado River of the West, pp. 116-129, pls. 1-2.)
- ROEMER (F.). Ueber den Bau von Melonites multipora, ein Echinid des amerikanischen Kohlenkalkes. (Archiv für Naturgeschichte, Jahrg. 21, Bd. 1, pp. 312-330, Pl. 12.)

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- LYON (S. S.) and CASSEDAY (S. A.). Description of two genera and eight new species of fossil Crinoidea, from the rocks of Indiana and Kentucky. (Proc. Am. Acad. Arts and Sci. Boston, Vol. V, pp. 16-31.)
- **OWEN** (R.). Description of fossils. (Geol. Reconnaissance of Indiana, pp. 362-365.)
- WHITE (C. A.). Description of new species of fossils from the Devonian and Carboniferous rocks of the Mississippi Valley. (Proc. Bost. Soc. Nat. Hist., Vol. IX, pp. 8-33.)
- -----. Observations on the summit structure of Pentremites, the structure and arrangement of certain parts of crinoids, and descriptions of new species, from the Carboniferous rocks at Burlington, Iowa. (Jour. Bost. Soc. Nat. Hist., Vol. VII, pp. 481-506.)
- and WHITFIELD (R. P.). Observations upon the rocks of the Mississippi Valley which have been referred to the Chemung Group of New York, together with descriptions of new species of fossils from the same horizon at Burlington, Iowa. (Proc. Bost. Soc. Nat. Hist., Vol. VIII, pp. 289-306.)

- WINCHELL (A.). Descriptions of fossils from the Marshall and Huron groups of Michigan. (Proc. Acad. Nat. Sci. Phil., pp. 405-430.)
- Notice of the rocks lying between the Carboniferous limestone of the Lower Peninsula of Michigan and the limestones of the Hamilton Group; with descriptions of some Cephalopods supposed to be new to science. (Am. Jour. Sci. (2), Vol. XXXIII, pp. 352-366.)

- BILLINGS (E.). Description of a new species of Phillipsia, from the Lower Carboniferous rocks of Nova Scotia. (Can. Nat., Vol. VIII, pp. 209-210.)
- DAVIDSON (T.). On the Lower Carboniferous Brachiopoda of Nova Scotia. (Quart. Jour. Geol. Soc. Lond., Vol. XIX, pp. 158-175, Pl. 9.)
- **HALL** (J.). Observations upon the genera Uphantænia and Dictyophyton; with notices of some species from the Chemung Group of New York and the Waverly sandstone of Ohio. (16th Rep. N. Y. State Cab. Nat. Hist., pp. 84-91.)
- SALTER (J. W.). On some fossil Crustacea from the Coal Measures and Devonian rocks of British North America. (Quart. Jour. Geol. Soc. Lond., Vol. XIX, pp. 75-80.)
- SHUMARD (B. F.). Descriptions of new Palæozoic fossils. (Trans. St. Louis Acad. Sci., Vol. II, pp. 108-113.)
- **SWALLOW** (G. C.). Descriptions of some new fossils from the Carboniferous and Devonian rocks of Missouri. (Trans. St. Louis Acad. Sci., Vol. II, pp. 81-100.)
- WINCHELL (A.). Descriptions of fossils from the yellow sandstones lying beneath the "Burlington limestone" at Burlington, Iowa. (Proc. Acad. Nat. Sci. Phil., pp. 2-25.)

- **DANA** (J. D.). On fossil insects from the Carboniferous formation in Illinois. (Am. Jour. Sci. (2), Vol. XXXVII, pp. 34-35.)
- **HALL** (J.). Preliminary notice of some species of Crinoidea from the Waverly sandstone series of Summit County, Ohio, supposed to be of the age of the Chemung Group of New York. (17th Rep. N. Y. State Cab. Nat. Hist., pp. 50-60.)
- **MEEK** (F. B.). Description of the Carboniferous fossils. (Pal. of California, Vol. I, pp. 1-16, Pls. 1, 2.)

- HARTT (C. F.). Paleontological Appendices (A and B) to "Observations on the Geology of Southern New Brunswick," by L. W. Bailey.
- McCHESNEY (J. H.). Plates illustrating in part the new species of fossils from the Palæozoic rocks of the Western States, and two new species noticed March, 1860, published April, 1865. (Title page and Pls. 1-11, with explanations.)
- MEEK (F. B.) and WORTHEN (A. H.). Note in relation to a genus of crinoids from the Coal Measures of Illinois and Nebraska, proposed on page 174 of the last number of this journal. (Am. Jour. Sci. (2), Vol. XXXIX, p. 350.)
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  Bull. 153——3

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#### 1892

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BATHER, F. A., 1893.

BEECHER, C. E., 1884, 1886, 1888, 1889, 1890.

BILLINGS, E., 1863.

BRADLEY, F. H., 1872, 1874.

BRADY, H. B., 1876.

Ввоссні, М. Р., 1880.

BUTTS, E., 1890.

CALVIN, S., 1890.

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CHRISTY, D., 1848.

CLARKE, J. M., 1897.

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DAVIDSON, T., 1863.

DAWSON, G. M., 1879.

DAWSON, J. W., 1854, 1860, 1867, 1868, 1876, 1877, 1878, 1879, 1880, 1883, 1894.

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Hall, J., 1852, 1856, 1857, 1858, 1860, 1861, 1863, 1864, 1867, 1872, 1879, 1883, 1884, 1885, 1886, 1887, 1888, 1890, 1894.

HALL, J., and CLARKE, J. M., 1892, 1894, 1895.

HALL, J., and WHITFIELD, R. P., 1873, 1874, 1877.

Намвасн, G., 1880, 1884.

HARE, S. J., 1891.

HARGER, O., 1874.

HARRIS, G. D., 1896, 1897.

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HAY, R., 1893.

HEILPRIN, A., 1884, 1886.

HERRICK, C. L., 1887, 1888, 1889, 1891, 1895.

HYATT, A., 1883, 1893, 1895.

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KEYES, C. R., 1888, 1889, 1890, 1891, 1892, 1894, 1896.

KONINCK, L. DE, 1847.

LEA, I., 1853, 1855.

LESQUEREUX, L., 1860.

Lyon, S. S., 1857, 1860, 1869.

Lyon, S. S., and Casseday, S. A., 1859, 1860, 1862.

MARCOU, J., 1858, 1875.

McChesney, J. H., 1860, 1861, 1865, 1868.

MEEK, F. B., 1860, 1864, 1866, 1867, 1870, 1871, 1872, 1873, 1874, 1875, 1876, 1877.

MEEK, F. B., and HAYDEN, F. V., 1858, 1859, 1860, 1864.

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MILLER, S. A., 1879, 1880, 1881, 1882, 1889, 1891, 1892, 1894.

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MILNE-EDWARDS and HAIME, 1851.

MORTON, S. G., 1836.

NEWBERRY, J. S., 1861, 1876.

NICHOLSON, H. A., 1875.

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OWEN, D. D., 1844, 1852.

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OWEN, R., 1862.

PACKARD, A. S., 1885, 1886, 1889.

PROUT, H. A., 1857, 1858, 1859, 1860, 1866.

ROEMER, F., 1852, 1859, 1861, 1876.

ROGERS, H. D., 1868.

ROMINGER, C., 1866, 1876.

ROWLEY, R. R., 1889, 1890, 1893, 1895.

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SAFFORD, J. M., 1869.

SALTER, J. W., 1855, 1863.

SAY, T., 1823, 1825.

SCHIEL, J., 1855.

SCHUCHERT, C., 1890.

SCUDDER, S. H., 1866, 1868, 1873, 1874, 1876, 1878, 187, 1882, 1883, 1884, 1885, 1888, 1890, 1893, 1895.

SHEPARD, U. U., 1838.

SHUMARD, B. F., 1854, 1855, 1857, 1858, 1859, 1860, 1863, 1866.

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STEVENS, R. P., 1858.

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TROOST, G., 1835.

ULBICH, E. O., 1882, 1883, 1884, 1886, 1888, 1890, 1891.

Vogdes, A. W., 1887, 1888, 1891, 1896.

WACHSMUTH, C., 1882, 1883.

WACHSMUTH, C., and SPRINGER, F., 1877, 1878, 1881, 1886, 1890, 1897.

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WALLACE, S. J., 1878.

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WETHERBY, A. G., 1879, 1880, 1881.

WHITE, C. A., 1860, 1862, 1873, 1874, 1876, 1877, 1878, 1879, 1880, 1881, 1882, 1883, 1884, 1889, 1891.

WHITE, C. A., and ST. JOHN, O. II., 1868.

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WHITEAVES, J. F., 1877.

WHITFIELD, R. P., 1876, 1881, 1882, 1891, 1892, 1893, 1895.

WINCHELL, A., 1862, 1863, 1865, 1869, 1870.

WOODWARD, H., 1884.

WORTHEN, A. H., 1860, 1882, 1883, 1884, 1890.

WORTHEN, A. H., and MILLER, S. A., 1883.

YANDELL, L. P., 1855.

YANDELL, L. P., and SHUMARD, B. F., 1847.

# GENERAL SUMMARY OF CLASSES AND GENERA.

# PROTOZOA AND SPONGES.

Genera.	No. of species.	Genera.	No. of species.
Amblysiphonella	1	Lasiocladia	
Batospongia	1	Loftusia	1
Belemnospongia	1	Lyrodictya	
Biopalla	8 !	Megastroma	:
Cidarospongia	1	Miliolites	
Cleodictya	2	Nodosinella	
Conopterium	1	Nullipora	
Cucumulites	2	Palæacis	
Dictyophyton	6	Phragmodictya	:
Betenodictya	4	Physospongia	
Endothyra	2	Ptychostylus	
Fusulina	6	Thamnodictya	
Hystricepongia	1	Valvulina	
	COR	ALS.	
Acervularia	1	Filioites	
Amplexus	7	Hadrophyllum	
Anisophyllum	1	Leptopora	
Aulopora	1	Lithostrotion	
Axophyllum	2	Lophophyllum	
Campophyllum	3	Michelinia	
Chætetes	4	Microcyclus	
Chonophyllum	1	Millepora	
Clisiophyllum	2	Pleurodictyum	
Cyathaxonia	2	Striatopora	
Cyathophyllum	4	Stylastrea	
Cystelasma	1	Syringopora	
Dictyonema	1	Trachypora	
Faviphyllum	1	Trochophyllum	
Favosites	2	Zaphrentis	3
`	CYST	DIDEA.	
Agelacrinus	4	Echinodiscus	
	BLAST	OIDEA.	
Codaster	5	Orophocrinus	
Cryptoblastus	4	Pentremites	3
Granatocrinus	14	Phænoschisma	
Heteroblastus	1	Schizoblastus	
Mesoblastus	1	Tricœlocrinus	(
Metablastus	6	Troostocrinus	\

# General summary of classes and genera-Continued.

# CRINOIDEA.

Genera.	No. of species.	Genera.	No. of species.
A brotocrinus	1	Graphicerinus	
Acrocrinus	8	Halysiocrinus	:
Actinocrinus	44	Hydreionocrinus	1:
Agaricocrinus	35	Ichthyocrinus	
A gassizocrinus	11	Lecythiocrinus	١,
Allagecrinus	2	Lobocrinus	1
Alloprosallocrinus	8	Macrocrinus	1
Amphoracrinus	8	Megistocrinus	
Aorocrinus	10	Melocrinus	
A telestocrinus	2	Mespilocrinus	
Barycrinus	33	Missouricrinus	
Batocrinus	132	Nipterocrinus	
Belemnocrinus	5	Onychocrinus	1
Blairocrinus	1	Parisocrinus	•
Bursacrinus	2	Periechocrinus	
Cactocrinus	23	Phialocrinus	1
Calceocrinus	1	Physetocrinus	
	2	1	9
Camptocrinus	3	Platycrinus	_
Catillocrinus	6	Į.	5
Ceriocrinus		Pterotocrinus	1
Cœliocrinus	5	Rhodocrinus	2
Cromyocrinus	4	Sampsonocrinus	
Cyathocrinus	41	Scaphiocrinus	7
Decadocrinus	15	Scytalocrinus	1
Dichocrinus	32	Steganocrinus	1
Dizygocrinus	22	Stemmatocrinus	
Dorycrinus	15	Strotocrinus	
Eretmocrinus	22	Synbathocrinus	] 1
Erisocrinus	4	Talarocrinus	
Eucladocrinus	6	Taxocrinus	2
Eupachycrinus	21	Teleiocrinus	
Eutrochocrinus	4	Ulocrinus	١ .
Forbesiocrinus	:	Vasocrinus	1
Gilbertsocrinus	9	Woodocrinus	2
Goniocrinus	1	Zeacrinus	2
	ASTER	COIDEA.	
Aganaster	1	Palmaster	
Cholaster	1	Sch@naster	l
Compsaster	1	Tremataster	
Onychaster	5		
	ECHIN	OIDEA.	<u>'</u>
Archæocidaris	22	Melonites	
Eocidaris	2	Oligoporus	
Hybochinus	1	Perischodomus	
Lepidechinus	2	Pholidocidaria	
Lepideathes	4	Rhœchinus	

# General summary of classes and genera—Continued

### VERMES.

Genera.	No. of species.	Genera.	No. of species
Cornulites	1	Serpulites	
Serpula	1	, Spirorbis	
	BRY	OZOA.	
Acanthocladia	2	Hemitrypa	
Acanthoclema	1	Heterodictya	
Actinotrypa	1	Leioclema	
Anisotrypa	4	Lyropora	
Archimedes	17	Meekopora	i I
Bactropora	1	Pinnatopora	
Batostomella	4	Polypora	,
Berenicea	1	Prismopora	
Chamodictyon	2	Proutella	
Cheilotrypa	1	Ptilodictya	
Coloconus	2	Ptilopora	
Coscinium	4	Ramipora	i
Cyclopora	2	Rhombopora	
Cycloporella	2	Septopora	
Cyntodictys	10	Sphragiopora	
Dichotrypa	5	Stenopora	
Diplopora	2	Stictopora	
Eridopora	2	Stictoporella	
· · · •	2	Streblotryps	
Rechara	4	_ '''	
Evactinopora	48	Strotopora	
Fenostella	2	Tæniodictya	
Fenestralia	_	lt :	
Fistulipora	6	Trematopora	
Heliotrypa	10 1	Worthenopora	
		IOPODA.	
Acambona	2	Cyrtins	
Acambona	2 3	Cyrtina Derbya	
Ambocœlia		l	
Ambocœlia	3	Derbya	
Ambocœlia AthyrisAtrypa	3 15	Derbya Dielasma	
Ambocœlia	3 15 1	Derbya Dielasma Enteletes	
Ambocœlia Athyris Atrypa Aulacorhynchus Barroisella	3 15 1 1	Derbya Dielasma Enteletes Eumetria	
Ambocœlia Athyris Atrypa Aulacorhynchus Barroisella Beecheria	3 15 1 1	Derbya Dielasma Enteletes Eumetria Glossina	
Ambocœlia Athyris Atrypa Anlacorhynchus Barroisella Beecheria Camarophorella	3 15 1 1 1 1	Derbya   Dielasma   Enteletes   Eumetria   Glossina   Harttina   Hustedia	
Ambocœlia Athyris Atrypa Aulacorhynchus Barroisella Beecheria Camarophorella	3 15 1 1 1 1 1	Derbya   Dielasma   Enteletes   Eumetria   Glossina   Harttina   Hustedia   Leiorhynchus	
Ambocœlia Athyris Atrypa Aulacorhynchus Barroisella Beecheria Camarophorella. Camarophoria Camarothœchia.	3 15 1 1 1 1	Derbya Dielasma Enteletes Eumetria Glossina. Harttina Hustedia Leiorhynchus Loptæna.	
Ambocœlia Athyris Atrypa Aulacorhynchus Barroisella Beecheria Camarophorella Camarophoria Camarothœchia Centronella	3 15 1 1 1 1 1 10 5	Derbya Dielasma Enteletes Eumetria Glossina Harttina Hustedia Leiorhynchus Lingula	
Ambocœlia Athyris Atrypa Aulacorhynchus Barroisella Beecheria Camarophorella Camarophoria Camarothœchia Centronella	3 15 1 1 1 1 1 10 5 3	Derbya Dielasma Enteletes Eumetria Glossina. Harttina Hustedia Leiorhynchus Leioptena Lingula Lingulodiscina	
Ambocœlia Athyris Atrypa Aulacorhynchus Barroisella Beecheria Camarophorella Camarophoria Camarothœchia Centronella Chonetes Chonetes	3 15 1 1 1 1 1 10 5 3 22 1	Derbya Dielasma Enteletes Eumetria Glossina Harttina Hustedia Leiorhynchus Leptena Lingula Lingulodiscina Martinia	
Ambocœlia Athyris Atrypa Anlacorhynchus Barroisella Beecheria Camarophorella Camarophoria Camarothochia Camarothochia Chonetes Chonopectus Cleiothyris	3 15 1 1 1 1 1 10 5 3 22 1	Derbya Dielasma Enteletes Eumetria Glossina Harttina Hustedia Leiorhynchus Loptena Lingula Lingulodiscina Martinia Meekella	
Ambocœlia Athyris Atrypa Aulacorhynchus Barroisella Beecheria Camarophorella Camarophoria Camarothœchia Contronella Chonetes Chonopectus Cleiothyris Conchidium	3 15 1 1 1 1 1 10 5 3 22 1 10	Derbya Dielasma Enteletes Eumetria Glossina Harttina Hustedia Leiorhynchus Leptena Lingula Lingulodiscina Martinia Meekella Orbiculoidea	
Ambocœlia Athyris Atrypa Aulacorhynchus Barroisella Beecheria Camarophoria Camarothœchia Centronella Chonetes Chonetes Cleiothyris Conchidium Crania	3 15 1 1 1 1 1 10 5 3 22 1 10 1 6	Derbya Dielasma Enteletes Eumetria Glossina Harttina Hustedia Leiorhynchus Leptena Lingula Lingulodiscina Martinia Meekella Orbiculoidea Orthis	:
Ambocœlia Athyris Atrypa Aulacorhynchus Barroisella Beecheria Camarophorella Camarophoria Camarothœchia Contronella Chonetes Chonopectus Cleiothyris Conchidium	3 15 1 1 1 1 1 10 5 3 22 1 10	Derbya Dielasma Enteletes Eumetria Glossina Harttina Hustedia Leiorhynchus Leptena Lingula Lingulodiscina Martinia Meekella Orbiculoidea	:

# General summary of classes and genera-Continued.

# BRACHIOPODA—Continued.

Genera.	No. of species.	Genera.	No. of species.
Ptychospira	2	Seminula	11
Pugnax	12	Spirifer	75
Reticularia	10	Spiriferina	16
Retzia	2	Streptorhynchus	2
Rhipidomella	15	Stricklandinia	1
Rhynchonella	82	Strophalosia	7
Rhynchopora	1	Strophomena	1
Rhynchospira	2	Syringothyris	
Romingerina	1	Terebratula	1 7
Schizophoria	3	Torynifer	1

### PELECYPODA.

Allorisma	82	Lunulicardium	1
Anatina	1	Lyriopecten	1
Anthracomya	5	Macrodon	20
Arca	4	Martesia	:
Astartella	5	Microdon	10
Avicula	14	Modiola	,
Aviculopecten	73	Modiomorpha	Į
Aviculopinna	2	Monopteria	
Axinus	1	Monotis	
Bakevellia	4	Myalina	30
Blairella	1	Mytilarca	:
Carbonarca	1	Mytilus	
Carbonicola	2	Naiadites	
Cardinia	9	Nucula	1
Cardiola	1	Nuculana	1
Cardiomorpha	14	Nuculites	:
Cardiopsis	3	Oracardia	:
Cardium	1	Orthonota	:
Chænocardia	1	Ostrea	
Chænomya	6	Palæoneilo	1
linopistha	2	Palæosolen	
Conocardium	15	Pararca	:
Prenipecten	6	Pernopecten	
Cypricardia	9	Pholadella	
Cypricardinia	5	Pinna	1
Dexiobis	8	Placunopsis	
dmondia	35	Pleurophorus	1
Glymella	2	Posidonia	
Suchondria	1	Posidonomya	1
lossites	1	Promacrus	
loniodon	1	Prothyris	
loniophora	1	Pseudomonotis	
rammysia	8	Pterinea	
socardia	2	Pterinopecten	
elopteria	6	Pteronites	
eptodesma	2	Ptychopteria	
Ama	2	Sanguinolaria	
imatulina	1	Sanguinolites	2
ithophaga	3	Schizodus	8.0

# General summary of classes and genera—Continued.

# PELECYPODA—Continued.

Genera.	No. of species.	Genera.	No. of
Sedgwickia	4	Sphenotus	
Solen	1	Spirodomus	
Solenomya	12	Streblopteria	
Solenopsis	8	Tellinomya	
Spathella	1	Yoldia	
	GASTR	OPODA.	
Aclisina	5	Naticopsis	
Ampullaria	1	Omphalotrochus	
Anomphalus	1	Orthonema	
Anthracopupa	ī	Orthonychia	
Bellerophon	53	Phanerotinus	
Bulimorpha	10		
Capulus	19	Physa	
•		K -	
Chiton	2	Pleurotomaria	
Cyclonema	3	Porcellia	
Cyrtolites	1	Pupa	
Dawsonella	1	Rotella	
Dentalium	12	Soleniscus	
Botrochus	1	Sphærodoma	
Holopea	5	Straparollus	
Holopella	1	Streptaxis	
goceras	5	Strophostylus	
epetopais	8	Trachydomia	
оховета	25	Trochita	
Metoptoma	2	Turbo	
Microdoma	1	Zaptychius	
Murchisonia	27	Zonites	
	-		
	PTER	OPODA.	
Coleolus	1	PODA.  Hyolithes	
Coleolus		<u> </u>	
Conularia	1 25	<u> </u>	
Conularia	1 25	Hyolithes	
Actinoceras.	1 25 CEPHAI	Hyolithes	
Actinoceras	1 25 CEPHAI	Hyolithes	
Actinoceras	1 25 CEPHAI 1 1	Hyolithes	
Actinoceras. Aphelæceras Asymptoceras Brancoceras	1 25 CEPHAI	Hyolithes	
Actinoceras. Aphelæceras Asymptoceras Brancoceras	1 25 CEPHAI 1 1 8 1	Hyolithes.  Goniatites Gyroceras Koninckioceras Leuroceras	
Actinoceras	1 25 CEPHAI 1 1 8 1 2	Hyolithes.  Goniatites Gyroceras Koninckioceras Leuroceras Medlicottia	
Actinoceras. Aphelseceras Asymptoceras Brancoceras Coloceras Cyrtoceras Discites	1 25 CEPHAI 1 1 8 1 2 9	Hyolithes.  Goniatites	
Actinoceras. Apheleceras Asymptoceras Brancoceras Coloceras Cyrtoceras Discites Domatoceras	1 25 CEPHAI 1 1 1 8 8 1 1 2 9 1 1	Hyolithes.  Goniatites Gyroceras Koninckioceras Leuroceras Medlicottia Metacoceras Munsteroceras Nautilus	
Actinoceras. Apheleceras. Asymptoceras Brancoceras Coloceras Cyrtoceras. Discites Domatoceras. Edaphoceras.	1 25 CEPHAI	Hyolithes.  Goniatites Gyroceras Koninckioceras Leuroceras Medicottia Metacoceras Munsteroceras Nautilus Oncodoceras	
Actinoceras. Aphelæceras. Asymptoceras Brancoceras Coloceras Cyrtoceras Discites Domatoceras Edaphoceras Endolobus	1 25 CEPHAI	Hyolithes.  Goniatites Gyroceras Koninckioceras Leuroceras Medlicottia Metacoceras Munsteroceras Nautilus Oncodoceras Orthoceras	
Actinoceras. Aphelæceras Asymptoceras Brancoceras Coloceras Cyrtoceras Discites Domatoceras Edaphoceras Endolobus Ephippioceras	1 25 CEPHAI 1 1 3 1 2 9 1 5 5 1 3 2 2	Hyolithes.  Goniatites Gyroceras Koninckioceras Leuroceras Medlicottia Metacoceras Munsteroceras Nautilus Oncodoceras Orthoceras Paralegoceras	
Conularia	1 25 CEPHAI	Hyolithes.  Goniatites Gyroceras Koninckioceras Leuroceras Medlicottia Metacoceras Munsteroceras Nautilus Oncodoceras Orthoceras	

# General summary of classes and genera—Continued.

# CEPHALOPODA—Continued.

	LALOPOI		
Genera.	No. of species.	Genera.	No. of species
Poterioceras	2	Tainoceras	
Pronorites	1	Temnocheilus	
Remeleceras	1	Thrincoceras	
Solenoceras	1	Titanoceras	
Solenocheilus	6	Tremstoceras	1
Stearoceras	1	Triboloceras	
Strobocerss	3	Waagenoceras	
	TRIL	BITA.	
Brachymetopus		Phillipsia	1
Dalmanites	1	Prœtus	1
Griffithides	7	·	
CRUSTA	CEA (NO	OT TRILOBITES).	
Acanthotelson	2	Dithyrocaris	
Anthrapalæmon		Estheria	
Archæocaris		Eurypterus	
Bairdia	1 1	Kirkbya	
Belinurus Beyrichia		Leaia Leperditia	
Bollia	1	Macrocaris	
Candona		Mesothyra	
Carbonia	3	Moores	
Ceratiocaris	1	Palgocaris.	
Colpocaris	. 3	Palæopalæmon	
Cryptozoe	1	Pontocypris	
Cyclus	1	Prestwichia	
Cypridina	1	Primitis	
Cythere	5	Rachura	
Cytherella	2	Rusichnites	
Cytherellina	1	Solenocaris	
Dipeltis	1	Tropidocaris	
Diplostylus	1	Ulrichia	
	ARACH	NOIDEA.	
Anthracomartus	3	Geratarbus	
Architarbus	2	Græophonus	
Arthrolycosa		Kustarachne	
Eoscorpius	1	Mazonia	
Geralinura	1	Poliochera	
Geraphrynus	1		
	MYRIA	PODA.	
Acantherpestes	1 1	Ilyodes	
Amynilyspes		Latzelia	
Anthracerpes	1 1	Palæocampa	
Archiulus	2	Palenarthrus	
Eileticus	2	Xylobius	
Euphoberia	11	1	

# General summary of classes and genera—Continued.

# INSECTA.

Genera.	No. of species.	Genera.	No. of species.
Adiphlebia	1	Lithomylacris	4
Æthophlebia	1	Megathentomum	1
Anthracoblattina	2	Miamia	1
Anthracothremma	1	Microblattina	1
Archegogryllus	1	Mylacris	14
Archimylacris	8	Necymylacris	2
Cheliphlebia	2	Oryctoblattina	2
Chrestotes	1	Paolia	.4
Didymophleps	1	Paralogus	1
Dieconeura	2	Paromylacris	5
Etoblattina	66	Petrablattina	2
Eucænus	1	Phthanocoris	1
Genopteryx	1	Polyernus	ĺ 2
Genentomum	1	Poroblattina	5
Gerablattina	21	Progonoblattina	1
Gerapompus	2	Promylacris	4
Gerarus		Propteticus	ı
Haplophlebium	2	Rhaphidiopsis	1
Hemeristia	1	Titanophama	1

# RÉSUMÉ OF CLASSES AND GENERA.

	Genera.	Species.
Protozoa and sponges	26	64
Corals	30	98
Cystoidea	2	7
Blastoidea	12	83
Crinoidea	70	1, 021
Asteroidea	7	13
Echinoidea	11	53
Vermes	4	16
Bryozoa	49	308
Brachiopoda	58	503
Pelecypoda	88	623
Gastropoda	42	386
Pteropoda	. 3	29
Cephalopoda	42	221
Trilobita	. 5	40
Crustaces (not Trilobites)	. 38	78
Arachnoidea	11	15
Myriopoda	. 11	30
Insecta	38	· 166
Total number	547	3, 754

Bull. 153----4



# PART II.

# BIBLIOGRAPHIC LIST OF GENERA AND SPECIES OF NORTH AMERICAN CARBONIFEROUS INVERTEBRATES, ARRANGED ALPHABETICALLY.

# ABROTOCRINUS Miller and Gurley, 1890.

# Abrotocrinus cymosus Miller and Gurley.

1890. Abrotocrinus cymosus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 350, pl. 5, fig. 2.

Keokuk Group: Washington County, Indiana.

### ACAMBONA White, 1862.

# Acambona osagensis Swallow.

1860. Retzia osagensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 653. Chemung rocks: Cooper and Benton counties, Missouri.

1894. Eumetria? osagensis. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 37, figs. 7-9.

Chouteau L. S.: Pike County, Missouri.

1894. Retziaf osagensis. Keyes, Mo. Geol. Surv., vol. 5, p. 94. Kinderhook Group: Cooper County, Missouri.

1895. Acambona? osagensis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 51, figs. 38, 39.

Chouteau L. S.: Pike County, Missouri.

### Acambona prima White.

1862. Acambona prima. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 27, figs. 1, 2.
L. Burlington L. S.: Burlington, Iowa.

1894. Acambona prima. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 37, figs. 21, 22.

Burlington L. S.: Burlington, Iowa.

1895. Acambona prima. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 51, figs. 40, 41. Burlington L. S.: Burlington, Iowa.

# ACANTHERPESTES Meek and Worthen, 1868.

### Acantherpestes inequalis Scudder.

1890. Acantherpestes inequalis. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, pp. 424, 425, pl. 33, figs. 2-4.

Carboniferous: Mazon Creek, Illinois.

1890. Acantherpestes inequalis. Scudder, Foss. Insc. N. A., vol. 1, pp. 400, 401, pl. 25, figs. 2-4.

Carboniferous: Mazon Creek, Illinois.

### Acantherpestes major Meek and Worthen.

1868. Euphoberia major. Meek and Worthen, Am. Jour. Sci. (2), vol. 46, p. 26.
Coal Measures: Mazon Creek, Grundy County, Illinois.

1868. Euphoberia?? major. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 558, fig. Coal Messures.

# Acantherpestes major Meek and Worthen-Continued.

1882. Acantherpestes major. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, pp. 150-156, pl. 10, 11, figs. 1-4, 6-8, 10, 11.

Carboniferous: Mazon Creek, Illinois.

1890. Acantherpestes major. Soudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 424.

1890. Acantherpestes major. Scudder, Foss. Insc. N. A., vol. 1, pp. 202-208, 400, pl. 7a, 8, figs. 1-4, 6-8, 10, 11.

Carboniferous: Mazon Creek, Illinois.

## ACANTHOCLADIA King, 1849.

### Acanthocladia americana Shumard.

1858. Acanthocladia anceps (?) Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 180. L. Permian: Valley of Cottonwood, Kansas.

1859. Acanthocladia americana. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 388.

Gray Permian L. S.: Guadalupe Mountains.

1859. Acanthocladia americana. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 24.

Upper Coal Measures: Cottonwood Creek, Kansas.

#### Acanthocladia fruticosa Ulrich.

1890. Acanthooladia fruticosa. Ulrich, Geol. Surv. Ill., vol. 8, p. 635, pl. 65, figs. 2, 2c.

Upper Coal Measures: Near Springfield, Illinois.

# ACANTHOCLEMA Hall, 1887.

#### Acanthoclema confluens Ulrich.

1888. Rhombopora confluens. Ulrich, Bull. Den. Univ., vol. 4, p. 91, pl. 14, fig. 17. Cuvahoga Shale: Lodi. Ohio.

Keokuk Group: Warsaw, Illinois.

1890. Acanthoolema confluens. Ulrich, Geol. Surv. Ill., vol. 8, p. 662, pl. 70, figs. 5.5b.

Keokuk Group: Nauvoo, Illinois.

# ACANTHOTELSON Meek and Worthen, 1860.

Acanthotelson eveni Meek and Worthen. See Acanthotelson stimpsoni.

Acanthotelson inequalis Meek and Worthen. See Palæocaris typus.

### Acanthotelson 7 magister Packard.

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1886. Acanthotelson? magister. Packard, Mem. Nat. Acad. Sci., vol. 3, pt. 2, p. 127, pl. 1, fig. 2; pl. 2, figs. 4, 5.

Carboniferous: Mazon Creek, Illinois.

#### Acanthotelson stimpsoni Meek and Worthen.

1865. Acanthotelson Stimpsoni. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 47.

Coal Measures: Morris, Illinois.

1866. Acanthotelson Stimpsoni. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 401, pl. 32, figs. 6-6f.

Lower Coal Measures: Morris, Grundy County, Illinois.

1868. Acanthotelson Eveni. Meek and Worthen, Am. Jour. Sci. (2), vol. 46, p. 28.
Coal Measures: Mazon Creek, Grundy County, Illinois.

1868. Acanthotelson Stimpsoni. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 549, figs. A-B.

Coal Measures: Mazon Creek, Grundy County, Illinois.

# Acanthotelson stimpsoni Meek and Worthen-Continued.

1868. Acanthotelson Ereni. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 551, figs. A-D.

Coal Measures: Mazon Creek, Grundy County, Illinois.

1880. Acanthotelson Stimpsoni. Brocchi, Bull. Soc. Geol. France (3), vol. 8, p. 10, pl. 1, fig. 11.

1884. Acanthotelson Stimpsoni. White, 13th Rep. Geol. Surv. Ind., p. 176, pl. 37, figs. 4, 5.

Coal Measures: Grundy County, Illinois.

1884. Acanthotelson Ereni. White, 13th Rep. Geol. Surv. Ind., p. 177, pl. 38, figs. 4-7.

Coal Measures: Grundy County, Illinois.

1886. Acanthotelson Stimpsoni. Packard, Mem. Nat. Acad. Sci., vol. 3, pt. 2, p. 123, pl. 1, figs. 1-1d; pl. 2, figs. 1-3.

Carboniferous: Mazon Creek, Illinois.

# ACERVULARIA Schweigger, 1820.

# Acervularia adjunctiva White.

1880. Acervalaria adjunctiva. White, Proc. U. S. Nat. Mus., vol. 2, p. 255, pl. 1, figs. 1-3.

Carboniferous: Blackfoot Range, south of Yellowstone National Park.

1880. Acervularia adjunctiva. White, Cont. to Pal., No. 6, p. 120, pl. 35, figs. 1a-d. Carboniferous: Blackfoot Range, south of Yellowstone National Park.

### Acervularia (species undetermined).

1876. Acervularia — ? — . White, Powell's Geol. Rep. Uinta Mts., p. 88.
L. Aubrey Group: Split Mountain Canyon, Green River, Utah.

# (ACLIS Leven, 1846.)

Aclis minuta Stevens. See Aclisina minuta.

Aclis robusta Stevens. See Aclisina robusta.

Aclis stevensoni White. See Aclisina stevensana.

Aclis swalloviana Meek. See Aclisina swallovana.

### ACLISINA De Koninck, 1881.

#### Aclisina bellilineata Miller.

1891. Aclisina bellilineata. Miller, Adv. Sheets 17th Rep. Geol. Surv. Ind., p. 85, pl. 14, fig. 10.

Chonteau L. S.: Sedalia, Missonri.

1892. Aclisina bellilineata. Miller, 17th Rep. Geol. Surv. Ind., p. 695, pl. 14, fig. 10.

Chouteau L. S.: Sedalia, Missouri.

1894. Aclieina?? bellilineata. Keyes, Mo. Geol. Surv., vol. 5, p. 202. Kinderhook L. S.: Sedalia, Missouri.

#### Aclisina minuta Stevens.

1858. Aclis minuta. Stevens, Am. Jour. Sci. (2), vol. 25, p. 259.
Coal Measures: Danville, Illinois.

1858. Murchisonia minima. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 203. Middle Coal Measures: Lexington, Missouri.

1888. Aclisina minuta. Keyes, Proc. Acad. Nat. Sci. Phil., p. 240. Lower Coal Messures: Des Moines, Iowa.

## Aclisina minuta Stevens-Continued.

- 1891. Aclisina minuta. Keyes, Proc. Acad. Nat. Sci. Phil., p. 259.
  - Lower Coal Measures: Des Moines, Iowa.
- 1894. Aclisina minuta. Keyes, Mo. Geol. Surv., vol. 5, p. 202. Upper Coal Measures: Lexington, Missouri.

# Aclisina robusta Stevens.

1858. Aclis robusta. Stevens, Am. Jour. Sci. (2), vol. 25, p. 259.

Coal Measures: Danville, Illinois.

1873. Actis robusta. Meek and Worthen, Geol. Surv. Ill., vol. 5. p. 596, pl. 29, fig. 6.

Coal Measures: Danville, Illinois.

- 1888. Aclisina robusta. Keyes, Proc. Acad. Nat. Sci. Phil., p. 240.
  Lower Coal Measures: Des Moines, Iowa.
- 1894. Aclisina robusta. Keyes, Mo. Geol. Surv., vol. 5, p. 202.
  . Upper Coal Measures: Kansas City, Missouri.

### Aclisina stevensana Meek and Worthen.

1866. Turritella?? Stevensana. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 382, pl. 27, figs. 8-8a.

Upper Coal Measures: North Branch Saline Creek, Gallatn: County, Illinois.

1881. Aclis ? stevensoni. White, U. S. Geog. Surv. w. 100 Merid., vol. 3, Supp. Appendix, p. xxxv, pl. 3, figs. 9a-b.

Carboniferous: Coyote Creek, New Mexico.

1894. Aclisina sterensana. Keyes, Mo. Geol. Surv., vol. 5, p. 202. Upper Coal Measures: Kansas City, Missouri.

### Aclisina swallovana Geinitz.

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Nebraska City, Nebraska.

1872. Aclis swalloviana. Meek, U. S. Geol. Surv. Nebr., p. 229, pl. 11, figs. 7a-b. Upper Coal Measures: Nebraska City, Nebraska.

# ACROCRINUS Yandell, 1855.

### Acrocrinus amphora Wachsmuth and Springer.

1897. Acrocrinus amphora. Wachsmuth and Springer, N. Am. Crin. Cam., p. 808, pl. 80, figs. 4-9.

St. Louis Group: Near Huntsville, Alabama.

### Acrocrinus shumardi Yandell.

1847. Yandell and Shumard, Cont. to Geol. of Ky., p. 25, pl., fig. 3. Grayson, Kentucky.

1855. Acroerinus Shumardi. Yandell, Am. Jour. Sci. (2), vol. 20, p. 136, fig. Carboniferous L. S.: Grayson County, Kentucky.

1858. Acroorinus urnæformis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 690, pl. 25, figs. 9a-b.

Kaskaskia L. S.: Pope County, Illinois.

1897. Acrocrinus Shumardi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 806, pl. 80, figs. 1-3.

Kaskaskia Group: Grayson and Pulaski counties, Kentucky.

#### Acrocrinus urnæformis. See Acrocrinus shumardi.

#### Acrocrinus wortheni Wachsmuth.

1882. Acrocrinus wortheni. Wachsmuth, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 40.

Coal Measures: Peoria County, Illinois.

### Acrocrinus wortheni Wachsmuth—Continued.

1883. Acrocrinus Worthoni. Wachsmuth, Geol. Surv. Ill., vol. 7, p. 343, pl. 30, fig. 13.

Coal Measures: Peoria County, Illinois.

1897. Acrocrinus Wortheni. Wachsmuth and Springer, N. Am. Crin. Cam., p. 807, pl. 80, figs. 10a-b.

Coal Measures: Peoria County, Illinois.

# (ACROCULIA Phillips, 1841.)

Acroculia ovalis Stevens. See Capulus ovalis.

Acroculia trigonalis Stevens. See Capulus trigonalis.

# (ACTÆONINA D'Orbigny.)

Actaonina minuta Meek and Worthen. See Bulimorpha minuta.

# ACTINOCERAS Bronn, 1837.

### Actinoceras inops Dawson.

1868. Actinocoras inops. Dawson, Acad. Geol., p. 314, fig. 133a. Carboniferous L. S.: East River, Pictou, Nova Scotia.

1888. Actinoceras inops? Foord, Cat. Foss. Ceph. in Brit. Mus., vol. 1, p. 193. Carboniferous L. S.: Brookfield, Nova Scotia.

Actinoceras expansum Meek and Worthen. See Orthoceras expansum.

### ACTINOCRINUS Miller, 1821.

Actinocrinus ægilops. See Teleiocrinus umbrosus.

Actinocrinus æqualis. See Batocrinus æqualis.

Actinocrinus æquibrachiatus. See Lobocrinus æquibrachiatus.

Actinocrinus æquibrachiatus var. alatus. See Lobocrinus æquibrachiatus var. asteriscus.

### Actinocrinus albersi Miller and Gurley.

1895. Actinocrinus albersi. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 46, pl. 2, figs. 21-23.

Chouteau L. S.: Sedalia, Missouri.

Actinocrinus althea. See Teleiocrinus althea.

Actinocrinus amplus. See Periechocrinus whitei.

Actinocrinus andrewsianus. See Batocrinus andrewsianus.

# Actinocrinus angustatus Miller and Gurley.

1894. Actinocrinus angustatus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 11.

Keokuk L. S.: Green County, Illinois.

Actinocrinus araneolus. See Steganocrinus araneolus.

Actinocrinus arnoldi. See Cactocrinus arnoldi.

### Actinocrinus arrosus Miller.

1892. Blairoorinus arrosus. Miller, Adv. Sheets 18th Rep. Geol. Surv. Ind., p. 41, pl. 7, figs. 1-5.

Chouteau L. S.: Sedalia, Missouri.

### Actinocrinus arrosus Miller—Continued.

1892. Blairocrinus bullatus. Miller, Adv. Sheets 18th Rep. Geol. Surv. Ind., p. 41, pl. 7, figs. 6-7.

Chouteau L. S.: Sedalia, Missouri.

1894. Blairocrinus arrosus. Miller, 18th Rep. Geol. Surv. Ind., p. 295, pl. 7, figs. 1-5.

Chouteau L. S.: Sedalia, Missouri.

1894. Blairocrinus bullatas. Miller, 18th Rept. Geol. Surv. Ind., p. 295, pl. 7, figs. 6-7.

Chouteau L. S.: Sedalia, Missouri.

1894. Actinocrinus arrosus. Keyes, Mo. Geol. Surv., vol. 4, p. 186. Kinderhook Group: Sedalia, Missouri.

1897. Actinocrinus arrosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 577, pl. 55, figs. 7, 8a-c.

Chouteau L. S.: Sedalia, Missouri.

# Actinocrinus arrosus Miller and Gurley.

1894. Actinocrinus arrosus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 15, pl. 2, fig. 4.

Burlington Group: Burlington, Iowa.

# Actinocrinus asperrimus Meek and Worthen.

1869. Strotocrinus? asperrimus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 160.

Burlington L. S.: Quincy, Illinois.

1873. Strotocrinus? asperrimus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 349, pl. 8, fig. 3.

Burlington L. S.: Quincy, Illinois.

1897. Actinocrinus asperrimus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 575, pl. 60, figs. 5-6.

L. Burlington L. S.: Burlington, Iowa.

Actinocrinus asterius. See Actinocrinus verrucosus.

Actinocrinus asteriscus. See Lobocrinus æquibrachiatus var. asteriscus.

Actinocrinus bischoffi Miller and Gurley.

1896. Actinocrinus bishoff. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 8, pl. 3, figs. 1-2.

Burlington Group: Burlington, Iowa.

Actinocrinus biturbinatus. See Batocrinus biturbinatus.

Actinocrinus blairi. See Cactocrinus glans.

# Actinocrinus botruosus Miller and Gurley.

1895. Actinocrinus botruosus. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 22, pl. 2, figs. 1-2. Keokuk Group: Tennessee.

Actinocrinus brevicornis. See Megistocrinus evansii.

Actinocrinus brevis. See Agaricocrinus brevis.

Actinocrinus brittsi. See Physetocrinus ornatus.

Actinocrinus brontes. See Actinocrinus lowei.

Actinocrinus calyculoides. See Eretmocrinus calyculoides.

Actinocrinus calyculus. See Batocrinus calyculus.

Actinocrinus calyculus var. hardinensis. See Batocrinus calyculus.

Actinocrinus carica. See Macrocrinus carica.

Actinocrinus caroli. See Batocrinus caroli.

Actinocrinus chloris. See Actinocrinus tenuisculptus.

## Actinocrinus chouteauensis Miller.

1892. Actinocrinus (?) chouteauensis. Miller, Adv. Sheeto 18th Rep. Geol. Surv. Ind., p. 18, pl. 3, figs. 9-11.

Chouteau L. S.: Near Sedalia, Missouri.

1894. Actinocrinus (7) chouteauensis. Miller, 18th Rep. Geol. Surv. Ind., p. 272, pl. 3, figs. 9-11.

Chouteau L. S.: Near Sedalia, Missouri.

1894. Dorycrinus chouteauensis. Keyes, Mo. Geol. Surv., vol. 4, p. 169. Kinderhook L. S.: Sedalia, Missouri.

1897. (f) Actinocrinus choutequensis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 570, pl. 46, figs. 11a-b.

Chouteau L. S.: Sedalia, Missouri.

Actinocrinus christyi. See Eutrochocrinus christyi.

Actinocrinus clarus. See Cactocrinus clarus.

Actinocrinus clavigerus. See Batocrinus similis.

Actinocrinus clio. See Eretmocrinus clio.

Actinocrinus clivosus. See Teleiocrinus rudis.

Actinocrinus clælia. See Eretmocrinus clælia.

Actinocrinus clypeatus. See Batocrinus clypeatus.

Actinocrinus cœlatus. See Cactocrinus cœlatus.

Actinocrinus concavus. See Acrocrinus concavus.

Actinocrinus concinnus. See Steganocrinus concinnus.

Actinocrinus copei. See Physetocrinus copei.

Actinocrinus corbulis. See Eretmocrinus corbulis.

Actinocrinus coreyi. See Agaricocrinus coreyi.

Actinocrinus corniculus. See Agaricocrinus brevis.

Actinocrinus cornigerus. See Dorycrinus cornigerus.

Actinocrinus coronatus. See Eretmocrinus coronatus.

Actinocrinus dalyanus. See Cactocrinus proboscidialis.

# Actinocrinus daphne Hall.

1864. Actinorinus daphne. Hall, 17th Rep. N. Y. State Cab. Nat. Hist., p. 52. Waverly Group: Richfield, Ohio.

1875. Actinocrinus Daphne. Hall and Whitfield, Pal. Ohio, vol. 2, p. 162, pl. 11, fig. 11.Waverly Group: Richfield, Ohio.

1897. Actinocrinus daphne. Wachsmuth and Springer, N. Am. Crin. Cam., p. 574, pl. 56, fig. 1.
Waverly Group: Richfield, Ohio.

Actinocrinus decornis. See Dorverinus cornigerus.

Actinocrinus delicatus. See Teleiocrinus umbrosus.

Actinocrinus desideratus. See Dorycrinus missouriensis.

Actinocrinus discoideus. See Batocrinus subæqualis.

Actinocrinus divaricatus. See Dorycrinus cornigerus.

Actinocrinus divergens. See Amphoracrinus divergens.

Actinocrinus dodecadactylus. See Dizygocrinus dodecadactylus.

Actinocrinus doris. See Batocrinus æqualis.

Actinocrinus equibrachiatus var. alatus. See Lobocrinus æquibrachiatus var. asteriscus.

Actinocrinus eris. See Acrocrinus helice.

Actinocrinus erodus. See Teleiocrinus rudis.

Actinocrinus erraticus Miller and Gurley.

1894. Actinocrinus erraticus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 14, pl. 2, figs, 2-3. Burlington Group: Drift at Danville, Illinois.

Actinocrinus eryx. See Cactocrinus glans.

Actinocrinus euconus. See Batocrinus euconus.

Actinocrinus evensii. See Megistocrinus evensii.

Actinocrinus excerptus. See Cactocrinus proboscidialis.

Actinocrinus fiscellus. See Agaricocrinus fiscellus.

Actinocrinus formosus. See Batocrinus subæqualis.

Actinocrinus fossatus. See Cactocrinus fossatus.

# Actinocrinus fosteri McChesney.

1860. Actinocrinus fosteri. McChesney, Desc. New Pal. Foss., p. 19. Burlington L. S.: Burlington, Iowa.

1865. Actinocrinus fosteri. McChesney, Ill. New Spec. Foss., pl. 5, figs. 2a-b.

1868. Actinocrinus fosteri. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 14, pl. 15, figs. 2a-b.

Burlington L. S.: Burlington, Iowa.

### Actinocrinus foveatus Miller and Gurley.

1895. Actinocrinus foveatus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 49, pl. 2, figs. 25-26.

Burlington Group: Sedalia, Missouri.

Actinocrinus gemmiformis. See Eretmocrinus gemmiformis.

# Actinocrinus gibsoni Miller and Gurley.

1894. Actinocrinus gibsoni. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 10, pl. 2, fig. 1. Keokuk Group: Indian Creek, near Crawfordsville, Indiana.

Actinocrinus glans. See Cactocrinus glans.

Actinocrinus glyptus. See Strotocrinus glyptus.

Actinocrinus gouldi. See Dorycrinus gouldi.

### Actinocrinus gracilis Wachsmuth and Springer.

1897. Actinocrinus gracilis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 572, pl. 56, fig. 11.

Lower Burlington L. S.: Burlington, Iowa.

### Actinocrinus grandis Miller and Gurley.

1890. Actinocrinus grandis. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 346, pl. 5, fig. 1; pl. 6, fig. 1.

Keokuk Group: Washington County, Indiana.

# Actinocrinus griffithi Wachsmuth and Springer.

1897. Actinocrinus Grifithi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 568, pl. 52, fig. 7.

Upper Burlington L. S.: Burlington and Pleasant Grove, Iowa.

Actinocrinus hageri. See Lobocrinus hageri.

Actinocrinus helice. See Acrocrinus helice.

Actinocrinus helice var. eris. See Acrocrinus helice.

# Actinocrinus hurdianus McChesney

1860. Actinocrinus hurdianus. McChesney, Desc. New Pal. Foss., p. 24. Burlington L. S.: Burlington, Iowa.

1865. Actinocrinus hurdianus. McChesney, Ill. New Spec. Foss., pl. 5, figs. 9a-b, pl. 11, fig. 1.

1868. Actinocrinus Hurdianus. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 17, pl. 5, figs. 9a-b.

Burlington L. S.: Burlington, Iowa.

Actinocrisis indianaensis. See Dizygocrinus indianaenis.

Actinocrinus inflatus. See Amphoracrinus spinobrachiatus.

Actinocrinus infrequens. See Cactocrinus thalia.

Actinocrinus inornatus. See Batocrinus clypeatus.

Actinocrinus insculptus. See Teleiocrinus rudis.

## Actinocrisus jessiese Miller and Gurley.

1896. Actinocrinus jessica. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 30, pl. 2, figs. 15-16.

Burlington Group: Sedalia, Missouri.

### Actinocrinus jugosus Hall.

1860. Actinocrinus jugosus. Hall, Supp., vol. 1, pt. 2, Geol. Rep. Iowa, p. 49. Keokuk L. S.: Warsaw, Illinois.

1894. Actinocrinus jugosus. Keyes, Mo. Geol. Surv., vol. 4, p. 190. Keokuk L. S.: Keokuk, Iowa.

1897. Actinocrinus jugosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 563, pl. 54, fig. 1.

Keokuk Group: Keokuk, Iowa; Missouri; Illinois.

Actinocrinus konincki. See Macrocrinus konincki.

Actinocrinus lagena. See Cactocrinus proboscidialis.

Actinocrinus lagunculus. See Macrocrinus lagunculus.

Actinocrinus laura. See Batocrinus laura.

Actinocrinus lepidus. See Batocrinus lepidus.

Actinocrinus leucosia. See Eretmocrinus leucosia.

Actinocrinus limabrachiatus. See Cactocrinus limabrachiatus.

Actinocrinus liratus. See Teleiocrinus liratus.

### Actinocrinus lobatus Hall.

1860. Actinocrinus lobatus. Hall, Supp., vol. 1, pt. 2, Geol. Rep. Iowa, p. 51. Keokuk L. S.: Warsaw Illinois.

1890. Actinocrinus lobatus. Worthen, Geol. Surv. Ill., vol. 8, p. 97, pl. 12, figs. 8-8a.

Keckuk L. S.: Green County, Illinois.

#### Actinocrinus lobatus Hall—Continued.

1894. Actinocrinus lobatus. Keyes, Mo. Geol. Surv., vol. 4, p. 190.

Keokuk L. S.: Kahoka, Missouri; Keokuk, Iowa; Warsaw, Illinois.

1897. Actinocrinus lobatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 557, pl. 52, figs. 1a-b; pl. 54, fig. 3; pl. 55, figs. 1a-b.

Burlington and Keokuk transition bed: Pleasant Grove, Iowa; Nauvoo, Illinois; Canton, Indiana.

Actinocrinus locellus. See Cactocrinus reticulatus.

Actinocrinus longirostris. See Lobocrinus longirostris.

Actinocrinus longus. See Cactocrinus longus.

### Actinocrinus lowei Hall.

1858. Actinocrinus lowei. Hall, Geol. Iowa, vol. 1, pt. 2. p. 611, pl. 15, figs. 5a-b. Keokuk L. S.: Near Warsaw, Illinois.

1860. Actinocrinus brontes. Hall, Supp., vol. 1, pt. 2, Geol. Rep. Iowa, p. 47. Keokuk L, S.: Nauvoo, Illinois.

1894. Actinocrinus lowei. Keyes, Mo. Geol. Surv., vol. 4, p. 189. Keokuk L. S.: Kahoka, Missouri; Keokuk, Iowa.

1897. Actinocrinus Lowei. Wachsmuth and Springer, N. Am. Crin. Cam., p. 562, pl. 54, fig. 2.

Keokuk Group: Keokuk, Iowa; Missouri; Illinois.

Actinocrinus lucina. See Cactocrinus lucina.

# Actinocrinus magnificus Wachsmuth and Springer.

1897. Actinocrinus magnificus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 567, pl. 53, fig. 2.

Keokuk Group: Indian Creek, Montgomery County, Indiana.

Actinocrinus matuta. See Eretmocrinus matuta.

Actinocrinus matuta var. attenuata. See Eretmocrinus attenuatus.

Actinocrinus minor. See Megistocrinus evansii.

Actinocrinus mississippiensis var. spiniger. See Dorycrinus mississippiensis.

Actinocrinus missouriensis. See Dorycrinus missouriensis.

### Actinocrinus monticuliferus Miller and Gurley.

1894. Actinocrinus monticuliferus. Miller and Gurley, Bull. No. 5, Ill. State Mus. Nat. Hist., p. 46, pl. 4, fig. 1.
Keokuk Group: Tennessee.

Actinocrinus multibrachiatus. See Cactocrinus multibrachiatus.

Actinocrinus multibrachiatus var. echinatus. See Cactocrinus multibrachiatus.

#### Actinocrinus multiradiatus Shumard.

Missouri.

\*1857. Actinocrinus multiradiatus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 75, pl. 1, fig. 5.

1858. Actinocrinus multiradiatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 579, pl. 10, fig. 9. Burlington L. S.: Burlington, Iowa.

1894. Actinocrinus multiradiatus. Keyes, Mo. Geol. Surv., vol. 4, p. 188.

Upper Burlington L. S.: Ash Grove, Missouri; Quincy, Illinois; Burlington, Iows.

1897. Actinocrinus multiradiatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 555, pl. 52, figs 3, 4a-b, 5, 6.
Upper Burlington L. S.: Burlington, Iowa; Quincy, Illinois; Hannibal,

Actinocrinus multiramosus Wachsmuth and Springer.

1897. Actinocrinus multiramosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 564, pl. 53, fig. 1; pl. 55, fig. 3.

Keokuk Group: Indian Creek, Montgomery County, Indiana; Canton, Indiana.

Actinocrinus mundulus. See Batocrinus mundulus.

Actinocrinus nashvillae. See Lobocrinus nashvillae.

Actinocrinus nashvillae var. subtractus. See Batocrinus subtractus.

Actinocrinus nodobrachiatus. See Cactocrinus nodobrachiatus.

Actinocrinus nodosus. See Cactocrinus thalia.

Actinocrinus obesus. See Cactocrinus obesus.

Actinocrinus oblatus. See Dizygocrinus rotundus.

Actinocrinus olliculus. See Periechocrinus whitei.

Actinocrinus opusculus. See Cactocrinus opusculus.

Actinocrinus ornatissimus. See Cactocrinus ornatissimus.

Actinocrinus ornatus. See Physetocrinus ornatus.

Actinocrinus ovatus. See Cactocrinus reticulatus var. ovatus.

Actinocrinus pallubrum Miller and Gurley.

1896. Actinocrinus pallubrum. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 26, pl. 1, figs. 25-27.

Burlington Group: Sedalia, Missouri.

Actinocrinus papillatus. See Batocrinus clypeatus.

Actinocrinus parvus. See Aorocrinus parvus.

Actinocrinus pendens. See Dorycrinus unicornis.

Actinocrinus penicillus Meek and Worthen.

1869. Actinocrinites penicillus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 155.

Lower Burlington L. S.: Burlington, Iowa.

1873. Actinocrinites penicillus. Meek and Worthen, Geol. Surv., Ill., vol. 5, p. 342, pl. 8, fig. 2.

Lower Burlington L. S.: Burlington, Iowa.

Actinocrinus pentagonus. See Steganocrinus pentagonus.

# Actinocrinus pernodosus Hall.

1858. Actinocrinus pernodosus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 608, pl. 15, figs. 3a-b.

Keokuk L. S.: Warsaw, Illinois.

1858. Actinocrinus permodosus var. ? Hall, Geol. Iowa, vol. 1., pt. 2, p. 617. pl. 16, fig. 7.

Keokuk L. S.: Warsaw, Illinois.

1894. Actinocrinus pernodosus. Keyes, Mo. Geol. Surv., vol. 4, p. 190. Keokok L. S.: Wayland, Missouri.

1897. Actinocrinus pernodosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 561, pl. 55, figs. 2a-b.

Keokuk Group: Keokuk, Iowa; Nauvoo, Hamilton, and Warsaw, Illinois.

Actinocrinus perumbrosus. See Strotocrinus regalis.

Actinocrinus pettisensis Miller and Gurley.

1896. Actinocrinus pettisensis. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 6, pl. 1, figs. 3-4.

Burlington Group: Sedalia, Missouri.

Actinocrinus pistilliformis. See Lobocrinus pyriformis.

Actinocrinus pistillus. See Batocrinus pistillus.

Actinocrinus plagosus Miller and Gurley.

1894. Actinocrinus plagosus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 16, pl. 2, figs. 5-6.

Burlington Group: Burlington, Iowa.

Actinocrinus planobasilis. See Amphoracrinus divergens.

Actinocrinus planodiscus. See Eutrochocrinus planodiscus.

Actinocrinus proboscidialis. See Cactocrinus proboscidialis.

Actinocrinus puteatus. See Cactocrinus lucina.

Actinocrinus pyramidatus. See Agaracocrinus pyramidatus.

Actinocrinus pyriformis. See Lobocrinus pyriformis.

Actinocrinus pyriformis var. rudis. See Lobocrinus pyriformis.

Actinocrinus quadrispinus. See Amphoracrinus divergens.

Actinocrinus quarternarius. See Cactocrinus proboscidialis.

Actinocrinus quarternarius var. spiniferus. See Cactrocrinus proboscidialis.

Actinocrinus quinquelobus. See Dorycrinus quinquelobus.

Actinocrinus ramulosus. See Eretmocrinus ramulosus.

Actinocrinus regalis. See Strotocrinus regalis.

Actinocrinus remibrachiatus. See Eretmocrinus remibrachiatus.

Actinocrinus reticulatus. See Cactocrinus reticulatus.

Actinocrinus rotundus. See Dizygocrinus rotundus.

Actinocrinus rudis. See Teleiocrinus rudis.

Actinocrinus rusticus. See Actinocrinus scitulus.

Actinocrinus sampsoni Miller and Gurley.

1896. Actinocrinus sampsoni. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 5, pl. 1, figs. 1-2.

Burlington Group: Sedalia, Missouri.

### Actinocrinus scitulus Meek and Worthen.

1860. Actinocrinus scitulus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 386. Burlington L. S.: Cedar Creek, Warren County, Illinois.

1861. Actinocrinus Sillimani. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 134.

Burlington L. S.: Clear Creek, Warren County, Illinois.

1861. Actinocrinus rusticus. Hall, Desc. New Spec. Crin., p. 2.

1861. Actinocrinus rusticus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 267. Burlington L. S.: Burlington, Iowa.

1862. Actinocrinus wachsmuthi. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 15. Upper Burlington L. S.: Burlington, Iowa.

1866. Actinocrinus scilulus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 202, pl. 15, figs. 7u-b.

Barlington L. S.: Burlington, Iowa.

Actinocrinus scitulus Meek and Worthen-Continued.

1893. Actinocrinus rusticus. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 10, pl. 1, fig. 13.

1894. Actinocrinus scitulus. Keyes, Mo. Geol. Surv., vol. 4, p. 188. Upper Burlington L. S.: Ste. Genevieve, Missouri.

1897. Actinocrinus scitulus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 559, pl. 55, figs. 5, 6a-b.

Upper Burlington L. S.: Burlington, Iowa.

Actinocrinus sculptus. See Steganocrinus sculptus.

Actinocrinus securis. See Cactocrinus thetis.

### Actinocrinus sedaliensis Miller.

1892. Actinocrinus sedaliensis. Miller, Adv. Shoets 18th Rep. Geol. Surv. Ind., p. 16, pl. 3, figs. 1-3.

Burlington Group: Sedalia, Missouri.

1894. Actinocrinus sedaliensis. Miller, 18th Rep. Geol. Surv. Ind., p. 270, pl. 3, figs. 1-3.

Burlington Group: Sedalia, Missouri.

Actinocrinus senarius. See Physetocrinus ornatus.

# Actinocrinus senectus Miller and Gurley.

1897. Actinocrinus senectus. Miller and Gurley, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 36, pl. 2, figs. 23-25. Chouteau L. S.: Sedalia, Missouri.

Actinocrinus sexarmatus. See Cactocrinus sexarmatus.

Actinocrinus sillimani. See Actinocrinus scitulus.

Actinocrinus similis. See Batocrinus mundulus.

Actinocrinus sinuosus. See Batocrinus laura var. sinuosus.

### Actinocrinus sobrinus Miller and Gurley.

1896. Actinocrinus sobrinus. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 10, pl. 3, figs. 4-5.

Burlington Group: Burlington, Iowa.

Actinocrinus speciosus. See Strotocrinus regalis.

# Actinocrinus spectabilis Miller and Gurley.

1896. Actinocrinus spectabilis. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 9, pl. 3, fig. 3.

Burlington Group: Burlington, Iowa.

Actinocrinus spinobrachiatus. See Amphoracrinus spinobrachiatus.

Actinocrinus spinosulus. See Acrocrinus spinosulus.

Actinocrinus spinotentaculus. See Cactocrinus cœlatus var. spinotentaculus.

Actinocrinus steropes. See Batocrinus steropes.

Actinocrinus subaculeatus. See Aorocrinus subaculeatus.

Actinocrinus subæqualis. See Batocrinus subæqualis.

### Actinocrinus subpulchellus Miller and Gurley.

1896. Actinocrinus subpulchellus. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 13, pl. 3, figs. 12-14.
Burlington Group: Burlington, Iowa.

Actinocrinus subrotundatus. See Batocrinus subrotundatus.

Actinocrinus subscitulus Miller and Gurley.

1896. Actinocrinus subscitulus. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 12, pl. 3, figs. 6-8.
Burlington Group: Burlington, Iowa.

Actinocrinus subturbinatus. See Dorverinus subturbinatus.

Actinocrinus subumbrosus. See Telejocrinus liratus.

Actinocrinus subventricosus. See Physetocrinus ventricosus.

Actinocrinus superlatus. See Megistocrinus evansii.

Actinocrinus symmetricus. See Acrocrinus parvus.

Actinocrinus tenuidiscus. See Periechocrinus tenuidiscus.

Actinocrinus tenuiradiatus. See Teleiocrinus tenuiradiatus.

# Actinocrinus tenuisculptus McChesney.

1860. Actinocrinus tenuisculptus. McChesney, Desc. New Pal. Foss., p. 15. Burlington L. S.: Columbia, Missouri.

1861. Actinocrinus chloris. Hall, Desc. New Spec. Crin., p. 3. Burlington L. S.

1861. Actinocrinus chloris. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 275. Burlington L. S.: Burlington, Iowa.

1865. Actinocrinus tenuisculptus. McChesney, Ill. New Spec. Foss., pl. 5, figs. 1a-b.

1868. Actinocrinus tenuisculptus. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 11, pl. 5, figs. 1a-b.

Burlington L. S.: Columbia, Missouri.

1894. Actinoorinus tenuisculptus. Keyes, Mo. Geol. Surv., vol. 4, p. 187. Lower Burlington L. S.: Columbia, Missouri.

1897. Actinocrinus tenuisculptus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 571, pl. 55, figs. 4 a-b.

Lower Burlington L. S.: Burlington, Iowa; Sedalia, Missouri; Lake Valley, New Mexico.

Actinocrinus thalia. See Cactocrinus thalia.

Actinocrinus themis. See Cactocrinus proboscidialis.

Actinocrinus thetis. See Cactocrinus thetis.

Actinocrinus thoas. See Actinocrinus reticulatus.

Actinocrinus tholus. See Cactocrinus glans.

Actinocrinus tricornis. See Dorycrinus unicornis.

#### Actinocrinus trijugis Miller.

1891. Blairocrinus trijugis. Miller, Adv. Sheets 17th Rep. Geol. Surv. Ind., p. 69, pl. 11, figs. 1-3.

Chouteau L. S.: Near Sedalia, Missouri.

1892. Blairocrinus trijugis. Miller, 17th Rep. Geol. Surv. Ind., p. 679, pl. 11, figs. 1-3. Chouteau L. S.: Near Sedalia, Missouri.

1894. Gennæocrinus trijugis. Keyes, Mo. Geol. Surv., vol. 4, p. 174, pl. 23, figs. 3a-b. Chouteau L. S.: Sedalia, Missouri.

1897. Actinocrinus trijugis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 576, pl. 54, figs. 4a-b.

Chouteau L. S.: Near Sedalia, Missouri.

Actinocrinus trinodus. See Dorycrinus parvus.

#### Actinocrinus tuberculosus Wachsmuth and Springer.

1897. Actinocrinus tuberoulosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 573, pl. 52, figs. 8a-c.

Upper Burlington L. S.: Burlington and Pleasant Grove, Iowa.

Actinocrinus turbinatus. See Batocrinus turbinatus.

Actinocrinus turbinatus var. elegans. See Batocrinus turbinatus.

Actinocrinus umbrosus. See Teleiocrinus umbrosus.

#### Actinocrinus unicarinatus Hall.

1860. Actinocrinus unicarinatus. Hall, Supp., vol. 1, pt. 2, Geol. Rep. Ia., p. 48.
Keokuk L. S.: Nauvoo, Illinois.

Actinocrinus unicornus. See Dorycrinus unicornis.

Actinocrinus unispina. See Dorycrinus unispina.

Actinocrinus urnæformis. See Macrocrinus konincki.

Actinocrinus validus. See Steganocrinus concinnus.

Actinocrinus ventricosus. See Physetocrinus ventricosus.

Actinocrinus ventricosus var. cancellatus. See Physetocrinus ventricosus.

Actinocrinus ventricosus var. internodius. See Physetocrinus ventricosus.

Actinocrinus ventricosus var. reticulatus. See Physetocrinus ventricosus.

Actinocrinus verneuilianus. See Macrocrinus verneuilianus.

#### Actinocrinus verrucosus Hall.

- 1858. Actinocrinus verrucosus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 578, pl. 10, figs. 7a-b. Burlington L. S.: Burlington, Iowa.
- 1860. Actinocrinus asterius. McChesney, Desc. New Pal. Foss., p. 13. Burlington L. S.: Monmouth, Illinois.
- 1865. Actinocrinus asterius. McChesney, Ill. New Spec. Foss., pl. 5, figs. 6a-b.
- 1868. Actinocrinus asterias. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 9, pl. 5, figs. 6a-b.
  Burlington L. S.: Monmouth, Illinois.
- 1894. Actinocrinus verrucosus. Keyes, Mo. Geol. Surv., vol. 4, p. 189, pl. 24, fig. 3. Upper Burlington L. S.: Hannibal, Ash Grove, Ste. Genevieve, and Howard County, Missouri.
- 1897. Actinocrinus verruosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 558, pl. 52, figs. 2a-c.
  - Upper Burlington L. S.: Burlington, Iowa; Monmouth and Quincy, Illinois.

#### Actinocrinus viaticus White.

- 1874. Actinocrinus viaticus. White, Prelim. Rep. Inv. Foss., p. 16.
  Subcarboniferous: Mountain Spring, Old Mormon Road, Nevada.
- 1877. Actinocrinus viaticus. White, U. S. Geog. Surv. w. 100 Merid., vol. 4, p. 82, pl. 5, fig. 1.

Subcarboniferous: Mountain Spring, Old Mormon Road, Nevada.

Actinocrinus viminalis. See Amphoracrinus viminalis.

Actinocrinus wachsmuthi. See Batocrinus grandis and Actinocrinus scitulus.

Actinocrinus whitei. See Periechocrinus whitei.

Actinocrinus yandelli. See Lobocrinus yandelli.

Bull. 153----5

# Actinocrinus (species undetermined).

1848. Actimocrinites. Christy, Letters on Geol., pl. 1, figs. 5-6.
Carboniferous Limestone: Oquawaka, Illinois.

1859. Actinocrinus sp. nobis. Lyon and Casseday, Am. Jour. Sci. (2), vol. 28, p. 240.

Subcarboniferous: Quarries near Louisville and Nashville Railroad, Clear Creek, Hardin County, Kentucky.

# ACTINOTRYPA Ulrich, 1890.

### Actinotrypa peculiaris Rominger.

1866. Fistulipora peculiaris. Rominger, Proc. Acad. Nat. Sci. Phil., p. 123. Keokuk L. S.: La Grange, Missouri.

1890. Actinotrypa peculiaris. Ulrich, Geol. Surv. Ill., vol 8. p. 503, pl. 77, figs. 3, 3a-b.

Keokuk L. S.: Keokuk, Iowa; La Grange, Missouri; Warsaw and Nauvoo, Illinois

1894. Actinotrypa peculiaris. Keyes, Mo. Geol. Surv., vol. 5, p. 18, pl. 34, fig. 6. Keokuk L. S.: La Grange, Missouri; Keokuk, Iowa.

# ADIPHLEBIA Scudder, 1885.

# Adiphlebia lacoana Scudder.

1885. Adiphlebia Lacoana. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 345, pl. 32, fig. 6.

Carboniferous: Mazon Creek, Illinois.

1890. Adiphlebia Lacoana. Scudder, Foss. Insc. N. A., vol. 1, p. 309, pl. 18, fig. 6. Carboniferous: Mazon Creek, Illinois.

#### (ÆSIOCRINUS Miller and Gurley, 1890.)

Esiocrinus angulatus. See Phialocrinus augulatus.

Æsiocrinus basilicus. See Phialocrinus basilicus.

Æsiocrinus harii. See Phialocrinus harii.

Æsiocrinus lykinsi. See Phialocrinus lykinsi.

Esiocrinus magnificus. See Phialocrinus magnificus.

#### ÆTHOPHLEBIA Scudder, 1885.

## Æthophlebia singularis Scudder.

1885: Æthophlebia singularis. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 338, pl. 31, fig. 9.

Carboniferous: Mazon Creek, Illinois.

1890. Ethophlebia singularis. Scudder, Foss. Insc. N. A., vol. 1, p. 302, pl. 17. fig. 9. Carboniferous: Mazon Creek, Illinois.

# AGANASTER Miller and Gurley, 1890.

#### Aganaster gregarius Meek and Worthen.

1869. Protaster? gregarius. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 169.

Keokuk Group: Crawfordsville, Indiana.

1873. Protaster' gregarius. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 509, pl. 16, fig. 5.

Keokuk Group: Crawfordsville, Indiana.

1890. Aganaster greyarius. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 372, pl. 9, figs. 10-11.

# Aganaster (species undetermined).

1890. Aganaster? sp. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 372, pl. 9, figs. 12-13.

## AGARICOCRINUS Troost, 1850.

# Agaricocrinus adamsensis Miller and Gurley.

1896. Agaricocrinus adamsensis. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 24, pl. 1, figs. 7-9.

Burlington Group: Adams County, Illinois.

## Agaricocrinus americanus Roemer.

- \*1855. Amphoracrinus americanus. Roemer, Lethaea. Geog., Ausg. 3, p. 250, pl. 41, figs. 15a-b.
- 1881. Agaricocrinus americanus. Wachsmuth and Springer, Rev. Palaeocr, pt. 3, p. 111.
- 1890. Agaricocrinus americanus. Gordon, Am. Geol., vol. 5, p. 261, figs. 2-5. Keokuk Group.
- 1890. Agaricocrinus americanus. Gordon, Proc. Iowa Acad. Sci., vol. 1, pt. 1, p. 101. Keokuk L. S.
  1891. Agaricocrinus dissimilis. Miller, Adv. Sheets 17th Rep. Geol. Surv. Ind.,
- 1891. Agaricocrinus dissimilis. Miller, Adv. Sheets 17th Rep. Geol. Surv. Ind., p. 55, pl. 8, fig. 11.
  Keokuk Group: Allen County, Kentucky.
- 1892. Agaricocrinus dissimilis. Miller, 17th Rep. Geol. Surv. Ind., p. 665, pl. 8, fig. 11.
  Keokuk Group: Allen County, Kentucky.
- 1894. Agaricocrinus americanus. Keyes, Mo. Geol. Surv., vol. 4, p. 168, pl. 22, figs. 8a-b.

Keokuk L. S; Wayland, Missouri.

1897. Agaricocrinus americanus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 488, pl. 42, figs. 1, 2a-b.
Keokuk Group: White's Creek, near Nashville, Tennessee; Pilot Knob,

# near Louisville, Kentucky. Agaricocrinus americanus yar, tuberosus Hall.

1858. Agaricocrinus tuberosus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 617, pl. 16, figs. 2a-a.

Keokuk L. S.: Keokuk, Iowa; Nauvoo and Warsaw, Illinois; White Creek Springs, Tennessee.

1897. Agaricocrinus americanus var. tuberosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 489, pl. 40, fig. 6; pl. 42, fig. 4.
Keokuk Group: Keokuk, Iowa; Hamilton, Nauvoo and Niota, Illinois.

# Agaricocrinus arcula Miller and Gurley.

1895. Agaricocrinus arcula. Miller and Gurley, Bull. No. 6. Ill. State Mus. Nat. Hist., p. 30, pl. 3, figs. 7-8.

Keokuk Group: Tennessee.

#### Agaricocrinus bellatrema. See Agaricocrinus ornotrema.

Agaricocrinus bellatrema var. major. See Agaricocrinus ornotrema var. major.

Agaricocrinus blairi. See Agaricocrinus planoconvexus.

#### Agaricocrinus brevis Hall.

- 1858. Actinocrinus brevis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 567, pl. 10, figs. 3a-b. Burlington L. S.: Burlington, Iowa.
- 1858. Actinocrinus corniculus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 566, pl. 10, figs. 1a-c.

Burlington L. S.: Burlington, Iowa.

## Agaricocrinus brevis Hall—Continued.

- 1860. Actinocrinus brevis. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, pl. 2, fig. 3.
- 1860. Actinocrinus corniculus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, pl. 2, fig. 2.
- 1894. Agaricocrinus brevis. Keyes, Mo. Geol. Surv., vol. 4, p. 167.
  - Lower Burlington L. S.: Louisiana and Hannibal, Missouri; Kinderhook, Illinois; Burlington, Iowa.
- 1897. Agaricocrinus brevis. Wachamuth and Springer, N. Am. Crin. Cam., p. 511, pl. 38, figs. 2a-e.

Lower Burlington L. S.: Burlington, Iowa; Southern Missouri.

## Agaricocrinus bullatus Hall.

- 1858. Agaricocrinus bullatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 562, pl. 9, figs. 11a-b.
  - Burlington L. S.: Burlington, Iowa.
- 1860. Agaricocrinus pentagonus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, p. 57. Burlington L. S.: Burlington, Iowa.
- 1893. Agaricocrinus pentagonus. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 25, pl. 2, figs. 17, 18.
  Burlington L. S.: Burlington, Iowa.
- 1894. Agaricocrinus pentagonus. Keyes, Mo. Geol. Surv., vol. 4, p. 167, pl. 22, fig. 9. Upper Burlington L. S.: Ash Grove and Ste. Genevieve, Missouri.
- 1897. Agariocerinus bullatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 493, pl. 41, figs. 2a-d.
   Upper Burlington L. S.: Burlington, Iowa.

#### Agaricocrinus chouteauensis Miller.

- 1892. Agaricocrinus chouteauensis. Miller, Adv. Sheets 18th Rep. Geol. Surv. Ind., p. 43, pl. 7, figs. 11-13.
  - Chouteau L. S.: Sedalia, Missouri.
- 1894. Agaricocrinus chouteauensis. Miller, 18th Rep. Geol. Surv. Ind., p. 297, pl. 7, figs. 11-13.
  Chouteau L. S.: Sedalia, Missouri.

# Agaricocrinus conicus Wachsmuth and Springer.

- 1897. Agaricocrinus conicus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 501, pl. 39, figs. 7-8.
  - Keokuk Group: Indian Creek, Montgomery County, Indiana.

#### Agaricocrinus convexus Hall.

- 1860. Agaricocrinus pentagonus var. convexus. Supp. vol. 1, pt. 2, Geol. Rep. Iowa, p. 58.
- 1872. Agaricocrinus pentagonus var. convexus. Hall, Photo. Plates of Crinoids, pl. 4, figs. 14-17.
- 1897. Agaricocrinus convexus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 508, pl. 38, figs. 1a-b.
  Upper Burlington L. S.: Burlington, Iowa.

# Agaricocrinus coreyi Lyon and Casseday.

- 1860. Actinocrinus Coreyi. Lyon and Casseday, Am. Jour. Sci. (2), vol 29, p. 76. Subcarboniferous L. S.: Hardin and Allen counties, Kentucky; Washington County, Indiana.
- 1882. Agaricocrinus springeri. White, 11th Rep. Geol. Surv. Ind., p. 362, pl. 40, figs. 2-4.
  - Keokuk or Burlington Group: Clinton, Vermilion County, Indiana, in "terrace drift."
- 1897. Agaricocrinus Coreyi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 510, pl. 39, figs. 1a-b.
  - Kookuk Group: Hardin and Allen counties, Kentucky; Vermilion County, Indiana.

Agaricocrinus corrugatus. See Agaricocrinus pyramidatus.

## Agaricocrinus crassus Wetherby.

1881. Agaricocrinus crassus. Wetherby, Jour. Cinn. Soc. Nat. Hist., vol. 4, p. 178, pl. 5, figs. 1-1b.

Keokuk Group: Tennessee.

1897. Agaricoorinus orassus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 499, pl. 39, figs. 2 a, b; pl. 40, fig. 4.

Keokuk Group: Keokuk, Iowa; Barren and Metcalfe counties, Kentucky; White's Creek, Tennessee; Indian Creek, Montgomery County, Indiana.

Agaricocrinus decornis. See Agaricocrinus planoconvexus.

Agaricocrinus dissimilis. See Agaricocrinus americanus.

# Agaricocrinus elegans Wetherby.

1881. Agaricocrinus elegans. Wetherby, Jour. Cinn. Soc. Nat. Hist., vol. 4, p. 179, pl. 5, figs. 4-4b.

Keokuk Group: Tennessee.

1897. Agaricocrinus elegans. Wachsmuth and Springer, N. Am. Crin. Cam., p. 500, pl. 40, figs. 3a-b.

Keokuk Group: Keokuk, Iowa; Niota, Illinois.

Agaricocrinus eris. See Aorocrinus helice.

#### Agaricocrinus excavatus Hall.

1861. Agaricocrinus exoavatus. Hall, Desc. New Spec. Crin., p. 3. Burlington L. S.

1861. Agaricocrinus (Amphoracrinus) excavatus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 282.

Upper Burlington L. S.: Brush Creek and Flint River, Iowa.

1893. Agaricocrinus excavatus. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 26, pl. 2, figs. 14-16.

Upper Burlington L. S.: Brush Creek and Flint River, Iowa.

1897. Agaricocrinus excavatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 491, pl. 39, figs. 3-5.

Upper Burlington L. S.: Burlington, Augusta, and Pleasant Grove, Iowa.

#### Agaricocrinus fiscellus Hall.

1861. Actinocrinus fiscellus. Hall, Desc. New Spec. Crin., p. 2. Burlington L. S.

1861. Actinocrinus fiscellus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 272. Burlington L. S.: Burlington, Iowa.

1897. Agaricocrinus fiscellus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 512, pl. 38, figs. 3a-c.

Lower Burlington L. S.: Burlington, Iowa, Southern Missouri.

Agaricocrinus geometricus. See Agaricocrinus stellatus.

#### Agaricocrinus germanus Miller.

1892. Agaricocrinus germanus. Miller, Adv. Sheets 18th Rep. Geol. Surv. Ind., p. 42, pl. 7, figs. 8-10.

Chouteau L. S.: Sedalia, Missouri.

1894. Agaricocrinus germanus. Miller, 18th Rep. Geol. Surv. Ind., p. 296, pl. 7, figs. 8-10.

Chouteau L. S.: Sedalia, Missouri.

Agaricocrinus gorbyi. See Agaricocrinus splendens.

## Agaricocrinus gracilis Meek and Worthen.

1861. Agaricocrinus gracilis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 135.

Burlington L. S.: Burlington, Iowa.

#### Agaricocrinus gracilis Meek and Worthen-Continued.

1897. Agaricocrisus gracilis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 513, pl. 41, figs. 3a-c.

Upper Burlington L. S.: Burlington, Iowa.

Agaricocrinus helice. See Aorocrinus helice.

# Agaricocrinus hodgsoni Miller and Gurley.

1896. Agaricocrinus hodgsoni. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 23, pl. 1, figs. 17-20.

Burlington Group: Adams County, Illinois.

Burnington Group: Adams County, Intuote

# Agaricocrinus illinoisensis Miller and Gurley.

1896. Agaricocrinus illinoisensis. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 25, pl. 1, figs. 21-23.

Burlington Group: Adams County, Illinois.

### Agaricocrinus indianensis. See Agaricocrinus splendens.

# Agaricocrinus inflatus Hall.

1861. Agaricocrinus inflatus. Hall, Desc. New Spec. Crin., p. 4.

Burlington L. S.

1861. Agaricocrinus (Amphoracrinus) inflatus. Hall, Jour. Bost. Soc. Nat. Hist., vol., 7, p. 284.

Burlington L. S.: Burlington, Iowa.

1897. Agaricocrinus inflatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 502, pl. 41, figs. 1a-d.

Upper Burlington L. S.: Burlington, Iowa.

# Agaricocrinus iowensis Miller and Gurley.

1897. Agaricocrinus iowensis. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 5, pl. 1, figs. 1-3.

Keokuk Group: Keokuk, Iowa.

#### Agaricocrinus keokukensis Miller and Gurley.

1897. Agaricocrinus keokukensis. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 7, pl. 1, figs. 4-6.

Keokuk Group: Keokuk, Iowa.

# Agaricocrinus macadamsi. See Agaricocrinus nodulosus var. macadamsi.

#### Agaricocrinus nodosus Meek and Worthen.

1869. Agaricocrinus nodosus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 167.

Upper Burlington L. S.: Burlington, Iowa.

1873. Agaricocrinus nodosus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 397, pl. 10, fig. 7.

Burlington L. S.: Burlington, Iowa.

1897. Agaricocrinus nodosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 493, pl. 43, fig. 9.

Upper Burlington L. S.: Pleasant Grove, lowa.

## Agaricocrinus nodulosus Worthen.

1890. Agaricocrinus nodulosus. Worthen, Geol. Surv. Ill., vol. 8, p. 94, pl. 13, figs. 1-1a.

Keokuk L. S.: Keokuk, Iowa.

1897. Agaricocrinus nodulosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 497, pl. 40, fig. 2, pl. 43, figs. 7a-b.

Keokuk Group: Keokuk, Iowa; Jersey County, Illinois; Montgomery County, Indiana; White's Creek, Tennessee; Canton, Indiana.

## Agaricocrinus nodulosus var. macadamsi Worthen.

1890. Agaricocrinus macadamsi. Worthen, Geol. Surv. Ill., vol. 8, p. 94, pl. 13, figs. 2-2a.

Keokuk L. S.: Jersey County, Illinois.

1897. Agaricocrinus nodulosus var. macadamsi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 498, pl. 39, fig. 6.

Keckuk Group: Hamilton, Illinois; Keckuk, Iowa; Montgomery County, Indiana.

#### Agaricocrinus ornotrema Hall.

1861. Agaricocrinus ornotrema. Hall, Desc. New Spec. Crin., p. 3. Burlington L. S.

1861. Agaricocrinus (Amphoracrinus) bellatrema. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 281.

Burlington L. S.: Burlington, Iowa.

1893. Agaricocrinus ornotrema. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 24, pl. 2, figs. 19-22.

Burlington L. S.

1897. Agaricocrinus bellatrema. Wachsmuth and Springer, N. Am. Crin. Cam., p. 506, pl. 41, figs. 4a-d.

Upper Burlington L. S.: Burlington and Pleasant Grove, Iowa.

# Agaricocrinus ornotrema var. major Wachsmuth and Springer.

1897. Agaricocrinus bellatrema var. major. Wachsmuth and Springer, N. Am. Crin. Cam., p. 507, pl. 41, fig. 5.

Upper Burlington L. S.: Burlington and Pleasant Grove, Iowa.

# Agaricocrinus pentagonus. See Agaricocrinus bullatus.

Agaricocrinus pentagonus var. convexus. See Agaricocrinus convexus. Agaricocrinus planoconvexus Hall.

1861. Agaricocrinus planoconvexus. Hall, Desc. New Spec. Crin., p. 3. Burlington L. S.

1861. Agaricocrinus (Amphoracrinus) planoconvexus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 280.

Burlington L. S.: Burlington, Iowa.

1891. Agaricocrinus decornis. Rowley and Hare, The Kausas City Scientist, vol. 5, p. 117, pl. 3, fig. 10.
Lower Burlington L. S.: Louisiana, Missouri.

1892. Agaricocrinus blairi. Miller, Adv. Sheets 18th Rep. Geol. Surv. Ind., p. 21, pl. 3, figs. 12-14.

Chouteau L. S.: Sedalia, Missouri.

1894. Agaricocrinus blairi. Miller, 18th Rep. Geol. Surv. Ind., p. 270, pl. 3, figs. 12-14.

Chouteau L. S.: Sedalia, Missouri.

1894. Agaricocrinus planoconvexus. Keyes, Mo. Geol. Surv., vol. 4, p. 167, pl. 22, figs. 7a, b.

Kinderhook L. S.: Sedalia, Missouri.

Lower Burlington L.S.: Hannibal, Missouri.

1897. Agaricocrinus planoconvexus. Wachsmuth and Springer, N. Am. Crin. Cam., p 503, pl. 38, figs. 6a-c.
Lower Burlington L. S.: Burlington, Iowa.

#### Agaricocrinus profundus Miller and Gurley.

1895. Agaricocrinus profundus. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 26, pl. 3, figs. 1-3.
Keokuk Group: Tennessee.

# Agaricocrinus pyramidatus Hall.

- 1858. Actinocrinus pyramidatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 565. Burlington L. S.: Burlington, Iowa.
- 1861. Agaricocrinus corrugatus. Hall, Desc. New Spec. Crin., p. 4. Burlington L. S.
- 1861. Agaricocrinus (Amphoracrinus) corrugatus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 283.
  - Burlington L. S.: Burlington, Iowa.
- 1893. Agaricocrinus pyramidatus. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 23, pl. 2, figs. 23-25.
  Burlington L. S.: Burlington, Iowa.
- 1897. Agaricocrinus pyramidatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 512, pl. 38, figs. 4a-c, 5a-c.

Lower Burlington L. S.: Burlington, Iowa; Southern Missouri.

## Agaricocrinus sampsoni Miller.

- 1892. Agaricocrinus sampsoni. Miller, Adv. Sheets 18th Rep. Geol. Surv. Ind., p. 20, pl. 3, fig. 8.
  - Chouteau L.S.: Near Chouteau Springs, Missouri.
- 1894. Agaricocrinus sampsoni. Miller, 18th Rep. Geol. Surv. Ind., p. 274, pl. 3, fig. 8.
  Chouteau L. S.: Near Chouteau Springs, Missouri.
- 1897. Agaricocrinus Sampsoni. Wachsmuth and Springer, N. Am. Crin. Cam., p. 505, pl. 46, fig. 5.
  Chouteau L. S.: Near Chouteau Springs, Missouri.

# Agaricocrinus splendens Miller and Gurley.

- 1890. Agaricocrinus splendens. Miller and Gurley, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 18, pl. 4, figs. 1, 2.
  - Keokuk Group: Crawford ville, Indiana.
- 1890. Agaricocrinus splendens. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 340, pl. 4, figs. 1, 2.
  Keokuk Group: Crawfordsville, Indiana.
- 1891. Agaricocrinus indianensis. Miller, Adv. Sheets 17th Rep. Geol. Surv. Ind., p. 53, pl. 8, fig. 5.
  Keokuk Group: Washington County, Indiana.
- 1891. Agaricocrinus gorbyi. Miller, Adv. Sheets 17th Rep. Geol. Surv. Ind., p. 54, pl. 8, fig. 9.
  Keokuk Group: Indian Creek, Montgomery County, Indiana.
- 1891. Agaricocrinus splendens. Miller, Adv. Shoets 17th Rep. Geol. Surv. Ind., p. 55, pl. 8, fig. 10.
- Keokuk Group: Crawfordsville, Ind.
  1892. Agaricocrinus indianensis. Miller, 17th Rep. Geol. Surv. Ind., p. 663, pl. 8, fig. 5.
  Keokuk Group: Washington County, Indiana.
- 1892. Agaricocrinus gorbyi. Miller, 17th Rep. Geol. Surv. Ind., p. 664, pl. 8, fig. 9. Keokuk Group: Indian Creek, Montgomery County, Indiana.
- 1892. Agaricocrinus splendens. Miller, 17th Rep. Gool. Surv. Ind., p. 665, pl. 8, fig. 10.
  - Keokuk Group: Crawfordsville, Indiana.

    97. Agaricocrinus splendens. Wachsmuth and Springer
- 1897. Agaricocrinus splendens. Wachsmuth and Springer, N. Am. Crin. Cam., p. 495, pl. 40, figs. 1a-c. Keokuk Group: Indian Creek, Montgomery County, Indiana.

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Agaricocrinus springeri. See Agaricocrinus coreyi.

#### Agaricocrinus stellatus Hall.

- 1858. Agaricocrinus stellatus. Hall, Geol. Iowa., vol. 1, pt. 2, p. 564. Burlington L. S.: Quincy, Illinois.
- 1860. Agaricocrinus geometricus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, p. 56. Burlington L. S.: Quincy, Illinois.
- 1897. Agaricocrinus stellatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 508, pl. 38, figs. 7a-e.

Upper Burlington L. S.: Burlington, Iowa; Illinois; Missouri.

# Agaricocrinus tuberosus. See Agaricocrinus americanus var. tuberosus. Agaricrocrinus tugurium Miller and Gurley.

1895. Agaricocrinus tugurium. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 28, pl. 3, figs. 4-6.
Keokuk Group: Boone County, Kentucky.

# Agaricocrinus whitfieldi Hall.

- 1858. Agaricocrinus whitfieldi. Hall, Geol. Iowa, vol. 1, pt. 2, p. 621. Keokuk L. S.: Greene County, Illinois.
- 1860. Agaricocrinus whitfieldi. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, pl. 3, fig. 5.
- 1873. Agaricocrinus Whitfieldi. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 499, pl. 12, figs. 1a, b, pl. 15, fig. 8.
  Keokuk Group: Greene County, Illinois.
- 1897. Agaricocrinus Whitfieldi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 496, pl. 42, fig. 3, pl. 43, figs. 8a, b. Keokuk Group: Greene County, Illinois; Keokuk, Iowa.

## Agaricocrinus wortheni Hall.

- 1858. Agaricocrinus wortheni. Hall, Geol. Iowa, vol. 1, pt. 2, p. 619, pl. 16, fig. 1. Keokuk L. S.: Keokuk, Iowa; Warsaw, Illinois.
- 1890. Agaricoorinus wortheni. Gordon, Am. Geol., vol. 5, p. 260, fig. 1. Keokuk Group.
- 1894. Agaricocrinus wortheni. Keyes, Mo. Geol. Surv. vol. 4, p. 168. Keokuk L. S.: Wayland, Missouri; Keokuk, Iowa.
- 1897. Agaricocrinus wortheni. Wachsmuth and Springer, N. Am. Crin. Cam., p. 490, pl. 39, fig. 9, pl. 40, figs. 5a-d. Keokuk Group: Keokuk, Iowa; Hamilton, Illinois.

# AGASSIZOCRINUS Troost, 1850.

# Agassizocrinus carbonarius Worthen.

1873. Agassizocrinus carbonarius. Worthen, Geol. Surv. Ill., vol. 5, p. 566, pl. 24, fig. 4.

Upper Coal Measures: Shelby County, Illinois.

#### Agassizocrinus chesterensis Worthen.

1873. Agassizocrinus Chesterensis. Worthen, Geol. Surv. Ill., vol. 5, p. 558, pl. 21, fig. 9.

Chester L. S.: Chester, Illinois.

# Agassizocrinus conicus Owen and Shumard.

- 1852. Agassizoorinus conicus. Owen and Shumard, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 93, pl. 11, fig. 6.
  - Subcarboniferous L. S.: Chester, Illinois.
- 1852. Agassizocrinus conicus. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 597, Tab. 5B, fig. 6.
- Subcarboniferous L. S.: Chester, Illinois.

  1873. Agassizocrinus conicus. Meek and Worthen, Geol. Surv. Ill., vol. 5, 7. 557, pl.
  - Chester Group: Chester, Illinois.

21, fig. 8.

#### Agassizocrinus constrictus Hall.

1858. Agassizoorinus constrictus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 687, pl. 25, fig. 10. Kaskaskia L. S.: Chester, Illinois.

#### Agassizocrinus dactyliformis Shumard.

1854. Agassizocrinus dactyliformis. Shumard, Marcy's Expl. Red River of Louis., p. 173, pl. 1, fig. 7.

Carboniferous: Washington County, Arkansas.

1873. Agassizocrinus dactyliformis. Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 21, figs. 7a, b.

Chester Group.

1894. Agassizocrinus dactyliformis. Keyes, Mo. Geol. Surv., vol. 4, p. 221. Kaskaskia L. S.: Chester, Illinois.

# Agassizocrinus gibbosus Hall.

1858. Agassizocrinus gibbosus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 686, pl. 25, figs. 6-6b.

Kaskaskia L. S.: Chester, Illinois.

1873. Agassizoorinus gibbosus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 558, pl. 21, fig. 11.

Chester Group: Chester, Illinois.

Agassizocrinus globosus. See Cromyocrinus globosus.

Agassizocrinus hemisphericus. See Cromyocrinus hemisphericus.

## Agassizocrinus lævis Roemer.

\*1855. Astylogrinus lævis. Roemer, Lethæa. Geog., Ausg. 3, p. 229, pl. 4, fig. 13.

# Agassizocrinus occidentalis Owen and Shumard.

1852. Poteriocrinus occidentalis. Owen and Shumard, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 92, pl. 11, figs. 5a, b.

Carboniferous L. S.: Chester, Illinois.

1852. Poteriocrinus occidentalis. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 596, Tab. 5B, figs. 5a, b.

Carboniferous L. S.: Chester, Illinois.

# Agassizocrinus ovalis Miller and Gurley.

1896. Agassizocrinus ovalis. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 36, pl. 2, figs. 13, 14.

Kaskaskia Group: Randolph County, Illinois.

Agassizocrinus papillatus. See Cromyocrinus papillatus.

## Agassizocrinus pentagonus Worthen.

1873. Agassizocrinus pentagonus. Worthen, Geol. Surv. Ill., vol. 5, p. 556, pl. 21, fig. 10.

Chester Group: Chester, Illinois.

# Agassizocrinus tumidus Owen and Shumard.

1852. Poteriocrinus tumidus. Owen and Shumard, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 90, pl. 11, figs. 3a, b.

Carboniferous L. S.: Chester, Illinois.

1852. Poteriocrinus tumidis. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 595, Tab. 5B, figs. 3a, b.

Carboniferous L. S.: Chester, Illinois.

#### AGELACRINUS Vanuxem, 1842.

## Agelacrinus blairi Miller.

1892. Agelacrinus blairi. Miller, Adv. Sheets 18th Rep. Geol. Surv. Ind., p. 12, pl. 2, fig. 9.

Keokuk Group: Boonville, Missouri.

#### Agelacrinus blairi Miller-Continued.

1894. Agelacriaus blairi. Miller, 18th Rep. Geol. Surv. Ind., p. 266, pl. 2, fig 9. Keokuk Group: Boonville, Missouri.

Agelacrinus kaskaskiensis. See Echinodiscus kaskaskiensis.

## Agelacrinus legrandensis Miller and Gurley.

1894. Agelacrinus legrandensis. Miller and Gurley, Bull. No. 5, Ill. State Mus. Nat. Hist., p. 15, pl. 3, figs. 13, 14.

Kinderhook Group: Legrand. Iowa.

# Agelacrinus pulaskiensis Miller and Gurley.

1894. Agelacrinus pulaskiensis. Miller and Gurley, Bull. No. 5, Ill. State Mus. Nat. Hist., p. 16, pl. 3, fig. 18.
Kaskaskia Group: Pulaski County, Kentucky.

#### Agelacrinus squamosus Meek and Worthen.

1868. Agelacrinites (Lepidodiscus) squamosus. Meek and Worthen, Proc. Acad. \
Nat. Sci. Phil., p. 357.

Keokuk Group: Crawfordsville, Indiana.

1873. Agelacrimites (Lopidodiscus) squamosus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 513, pl. 16, fig 1.

Keokuk Group: Crawfordsville, Indiana.

## ALLAGECRINUS Etheridge and Carpenter, 1881.

#### Allagecrinus carpenteri Wachsmuth.

1882. Allageorinus carpenteri. Wachsmuth, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 40.

Chester or Kaskaskia L. S.: Monroe County, Illinois.

1883. Allageorinus Carpenteri. Wachsmuth, Geol. Surv. Ill., vol. 7, p. 341, pl. 29 fig. 14.

Chester L. S.: Monroe County. Illinois.

## Allagecrinus americanus Rowley.

1895. Allagecrinus americanus. Rowley, Am. Geol., vol. 16, p. 219, figs. 3-10. Louisiana L. S: Louisiana, Missouri.

# ALLOPROSALLOCRINUS Lyon and Casseday, 1860.

# Alloprosallocrinus celsus Miller and Gurley.

1894. Alloprosallocrinus celsus. Miller and Gurley, Bull. No. 5, Ill. State Mus. Nat. Hist., p. 47, pl. 4, figs. 9-11.
Warsaw Group: Tennessee.

#### Alloprosallocrinus conicus Lyon and Casseday.

1860. Alloprosallocrinus conicus. Lyon and Casseday, Proc. Am. Acad. Arts and Sci. Bost., vol. 5, p. 29.

Top of the Knobstone: Clear Creek, Hardin County, also near Scottville, Allen County, Kentucky.

1891. Alloprosallocrinus gurleyi. Miller, Adv. Sheets 17th Rep. Geol. Surv. Ind., p. 58, pl. 10, figs. 1, 2.
Keokuk or Warsaw Group: Brown County, Kentucky.

1892. Alloprocallocrinus gurleyi. Miller, 17th Rep. Geol. Surv. Ind., p. 668, pl. 10, figs. 1, 2.

Keokuk or Warsaw Group: Brown County, Kentucky.

1897. Alloprosallocrinus conicus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 407, pl. 42, figs. 14a-c.

Keokuk Group: Pilot Knob, near Louisville, Kentucky; White's Creek, near Nashville, Tennessee; New Ross, Montgomery Connty, Indiana.

# Alloprosallocrinus depressus Lyon and Casseday.

1860. Alloprosallorinus depressus. Lyon and Casseday, Proc. Am. Acad. Arts and Sci. Bost., vol. 5, p. 31.

Subcarboniferous: Clear Creek, Hardin County, Kentucky.

Alloprosallocrinus gurleyi. See Alloprosallocrinus conicus.

# ALLORISMA King, 1844.

Allorisma altirostrata. See Sedgwickia altirostrata.

# Allorisma andrewsi Whitfield.

1882. Allorisma Andrewsi. Whitfield, Ann. N. Y. Acad. Sci., vol. 2, p. 222.

Maxville L. S.: Newtonville, Ohio.

1888. Allorisma Andrewsi. Herrick, Bull. Den. Univ., vol. 4, pl. 11, fig. 12. Chester L. S.: Ohio.

1891. Allorisma Andrewsi. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 588, pl. 14, fig. 6.

Maxville, L. S.: Newtonville, Ohio.

1895. Allorisma Andrewsi. Whitfield, Geol. Surv. Ohio, vol. 7, p. 475, pl. 10, fig. 6. Maxville L. S.: Newtonville, Ohio.

#### Allorisma antiquum Swallow.

1863. Allorisma antiqua. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 95. Kaskaskia L. S.: Illinois and Missouri.

1894. Allorisma antiqua. Keyes, Mo. Geol. Surv., vol. 5, p. 127. Keokuk, L. S.: Ste. Genevieve, Missouri.

#### Allorisma arkansana Weller.

1897. Allorisma arkansana. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 265, pl. 20, figs. 4, 5.

Batesville S. S.: Batesville, Arkansas.

# Allorisma capax Newberry.

1861. Allorisma capax. Newberry, Ives's Colo. Expl. Exped., p. 120, pl. 1, figs. 9-9a. Upper Carboniferous or Permian L. S.: Agua Azul, near the base of Mount Taylor.

#### Allorisma clavatum McChesney.

1860. Allorisma clavata. McChesney, Desc. New Pal. Foss., p. 56. Kaskaskia L. S.: Chester, Illinois.

1865. Allorisma (Sanguinaria) clavata. McChesney, Ill. New Spec. Foss., pl. 6, figs. 9a-b.

1868. Allorisma clavata. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 43, pl. 6, figs. 9a, b.

Chester L. S.: Chester, Illinois.

#### Allorisma consanguinatum Herrick.

1888. Allorisma consanguinatus. Herrick, Bull. Den. Univ., vol. 4, p. 29, pl. 11, fig. 13.

Waverly Group: Ohio.

#### Allorisma convexa Herrick.

1888. Allorisma convexa. Herrick, Bull. Den. Univ., vol. 3, p. 74, pl. 12, fig. 27. Waverly Group: Licking County, Ohio.

1895. Allorisma convexa. Herrick, Geol. Surv. Ohio, vol. 7, pl. 23, fig. 19. Middle Waverly Group: Licking County, Ohio.

Allorisma cooperi Meek and Hayden. See Chanomya cooperi.

#### Allorisma cooperi Herrick.

1888. Allorisma cooperii. Herrick, Bull. Den. Univ., vol. 3, p. 72, pl. 6, fig. 10. Waverly Group: Licking County, Ohio.

#### Allorisma costatum Meek and Worthen.

- 1869. Allorisma costata. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 171. Lower Coal Measures: Warren County, Illinois.
- 1873. Allorisma costata. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 585, pl. 26, fig. 15.

Coal Measures: Warren County, Illinois.

- 1875. Allorisma costata. Meek, Pal. Ohio, vol. 2, p. 344, pl. 19, figs. 6a, b. Coal Measures: Greentown, Starke County, Ohio; Illinois; Iowa.
- 1887. Allorisma costata. Herrick, Bull. Den. Univ., vol. 2, p. 33, pl. 3, fig. 7; pl. 4, fig. 28; p. 146, pl. 14, fig. 25.
  Coal Measures: Flint Ridge, Ohio.
- 1894. Allorisma costata. Keyes, Mo. Geol. Surv., vol. 5, p. 128, pl. 46, fig. 12. Upper Coal Measures: Kansas City, Missouri.

## Allorisma cuneatum Swallow.

1858. Allorisma cuncata. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 210. Middle Coal Measures: Near Lexington, Missouri.

#### Allorisma curtum Swallow.

1858. Allorisma (?) curta. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 194. Permian: Near Council Grove, Kansas.

# Allorisma cuyahoga Herrick.

- 1888. Allorisma cuyahoga. Herrick, Bull. Den. Univ., vol. 4, p. 28, pl. 10, fig. 34. Waverly Group: Cuyahoga River, Ohio.
- 1895. Allorisma cuyahoga. Herrick, Geol. Surv. Ohio, vol. 7, pl. 22, fig. 17. Near base of Cuyahoga Shale, lower falls of Cuyahoga River, Ohio.

## Allorisma elegans. See Allorisma geinitzi.

## Allorisma elongatum Morton.

1836. Pholadomya elongata. Morton, Am. Jour. Sci. (1), vol. 29, p. 153, pl. 26, fig. 37.

Coal Measures: Ohio Valley.

#### Allorisma elongatum Worthen. See Allorisma worthenanum.

#### Allorisma ensiforme. See Allorisma subcuneatum.

#### Allorisma geinitzi Meek.

- 1866. Allorisma elegans. Geinitz, Carb. und Dyas in Nebr., p. 13, tab. 1, fig. 31, (not A. elegans King, 1844.)
  - Nebraska City, Nebraska.
- 1872. Allorisma (Sedgwickia) Geinitzii. Meek, U. S. Geol. Surv. Nebr., p. 219, pl. 10, figs. 16a, b.

Upper Coal Measures: Nebraska City, Nebraska.

Upper Middle and Lower Coal Measures: Illinois.

- 1873. Allorisma Geinitzii. Meek, Geol. Surv. Ill., vol. 5, p. 586, pl. 26, tig. 23. Coal Measures: Knox County, Illinois.
- 1887. Allorisma Geinitzii. Herrick, Bull. Den. Univ., vol. 2, p. 33, pl. 4, fig. 27. Coal Measures: Flint Ridge, Ohio.

# Allorisma gilborti White.

- 1879. Allorisma? gilberti. White, Bull. U. S. Geol. and Geog. Surv. Terr., vol. 5, p. 217.
  - Carboniferous: Wild Band Pockets, northern Arizona, 15 miles south of Pipe Spring.
- 1880. Allorisma? gilberti. White, Cont. to Inv. Pal., No. 6, p. 137, pl. 33, figs. 9a, b.
  - Upper Carboniferous: Wild Band Pockets, Northern Arizona, 15 miles south from Pipe Spring.

## Allorisma granosum Shumard.

1858. Leptodomus granosus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 207. Upper Coal Measures: Valley of Verdigris River, Kansas.

1872. Allorisma (Sedgwickia) granosa. Meek, U. S. Geol. Surv. Nebr., p. 220, pl. 2, fig. 8.

Upper Coal Measures: Rock Bluff, Nebraska; Verdigris River, Kansas.

1894. Allorisma granosum. Keyes, Mo. Geol. Surv., vol. 5, p. 128. Upper Coal Measures: Kansas City, Missouri.

Allorisma hannibalense. See Grammysia hannibalensis.

# Allorisma hybridum Meek and Worthen.

1865. Chanomya? hybrida. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 250.

Keokuk Group: Nauvoo, Illinois.

1868. Allorisma (Chanomya?) hybrida. Meek and Worthen, Geol. Surv. Iil., vol. 3, p. 538, pl. 19, fig. 3a.
Keokuk Group: Nauvoo. Illinois.

#### Allorisma illinoisense Worthen.

1884. Allorisma illinoiense. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 11. Keokuk L. S.: Warsaw, Illinois.

1890. Allorisma illinoiensis. Worthen, Geol. Surv. Ill., vol. 8, p. 132, pl. 18, figs. 1, 1a.

Keokuk L. S.: Warsaw, Illinois.

#### Allorisma lanceolatum Swallow.

1858. Allorisma lanceolata. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 194. Permian: Valley of Cottonwood, Kansas.

#### Allorisma latum Swallow.

1858. Allorisma lata. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 210. Middle Coal Measures: Near Lexington, Missouri.

Allorisma leavenworthense. See Chænomya leavenworthensis.

#### Allorisma marionense White.

1876. Allorisma marionensis. White, Proc. Acad. Nat. Sci. Phil., p. 31.
St. Louis L. S.: Marion and Mahaska counties, Iowa.

1880. Allorisma marionensis. White, Cont. to Inv. Pal., No. 8, p. 167, pl. 41, figs. 3a, b.

St. Louis Group: Marion and Mahaska counties, Iowa.

1894. Allorisma marionensis. Keyes, Mo. Geol. Surv., vol. 5, p. 127. St. Louis L. S.: St. Louis, Missouri.

#### Allorisma maxvillense Whitfield.

1882. Allorisma Maxvillensis. Whitfield, Ann. N. Y. Acad. Sci., vol. 2, p. 222. Maxville L. S.: Newtonville, Ohio.

1891. Allorisma Maxvillensis. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 588, pl. 14, figs. 7, 8.

Maxville L. S.: Newtonville, Ohio.

1895. Allorisma Maxvillensis. Whitfield, Geol. Surv. Ohio, vol. 7, p. 475, pl. 10, figs. 7, 8.

Maxville L. S.: Newtonville, Ohio.

#### Allorisma minnehaha. See Chænomya minnehaha.

Allorisma nobilis. See Sanguinolites nobilis.

#### Allorisma pleuropistha Meek.

1871. Allorisma (Sedgwickia?) pleuropistha. Meek, Proc. Acad. Nat. Sci. Phil., p. 70.

Waverly Group: Rushville, Ohio.

## Allorisma pleuropistha Meek-Continued.

1875. Allorisma (Cercomyopsis) pleuropistha. Meek, Pal. Ohio, vol. 2, p. 309, pl. 13, figs. 4a-c.

Waverly Group: Rushville, Ohio.

#### Allorisma reflexum Meek.

1872. Alloriema (Sedgwickia) reflexa. Meek, U. S. Geol. Surv. Nebr., p. 217, pl. 10, fig. 15.

Upper Coal Measures: Nebraska City, Nebraska; Illinois.

Lower Coal Measures: Illinois.

## Allorisma regularis. See Allorisma subcuneata.

# Allorisma sinuatum McChesney.

1860. Allorisma sinuata. McChesney, Desc. New Pal. Foss., p. 56. Kaskaskia L. S.: Kaskaskia and Chester, Illinois.

1865. Allorisma (Sanguinaria) sinuata. McChesney, Ill., New Spec. Foss., pl. 6, figs. 8a-b.

1868. Allorisma sinuata. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 44, pl. 6, figs. 8a, b.

Chester L. S.: Kaskaskia and Chester, Illinois.

1873. Allorisma sinuata? Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 22, figs. 2a, b.

St. Louis Group.

## Allorisma subcuneatum Meek and Hayden.

- 1852. Allorisma regularis? Owen, Geol. Rep. Wis., Iowa, and Minn., tab. 5, fig. 13. Carboniferous: Missouri River at Wayne City.
- 1858. Allorisma subcuneata. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 263. Upper Coal Measures: Leavenworth, Kansas.
- 1860. Allorisma ensiformis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 656. Coal Measures: Clay City, Missouri.
- 1864. Allorisma subcuncata. Meek and Hayden, Pal. Up. Mo., p. 37, pl. 1, figs. 10a, b.
  Coal Measures: Leavenworth City, Kansas.
- 1866. Allorisma subcuneata. Geinitz, Carb. und Dyas in Nebr., p. 14. Plattsmouth and Wyoming, Nebraska: Kansas.
- 1872. Allorisma subcuneata. Meek, U. S. Geol. Surv. Nebr., p. 221, pl. 2, figs. 10a, b. Upper Coal Measures: Rock Bluff, 2½ miles southwest of Nebraska City, Wyoming and Plattsmouth, Nebraska; Leavenworth and Atchison, Kansas.

Upper and Lower Coal Measures: Illinois.

- 1876. Allorisma subcuneata. White, Powell's Rep. Geol. Uinta Mts., p. 91. Lower Aubrey Group: Confluence of Grand and Green rivers, Utalı.
- 1877. Allorisma subcuneata (var.). White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 155, pl. 12, figs. 7a, b.

Carboniferous: Near Agua Azul, New Mexico.

- 1881. Allorisma subcuneata? White, 2d Ann. Rep. Dept. Stat. and Geol. Ind., p. 518, pl. 8, figs. 1, 2.
  Coal Measures: Edwardsport, Knox County, Indiana.
- 1884. Allorisma subouncata. White, 13th Rep. Geol. Surv. Ind., p. 148, pl. 31, figs. 1-3.
  Coal Measures: Indiana.
- 1886. Allorisma subouncata. Heilprin, 2d Geol. Surv. Penn., Ann. Rep. for 1885, p. 457, p. 456, fig. 10a, p. 444, fig. 10.
  Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.
- 1886. Allorisma subcuneata. Heilprin, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 272, fig. 10, p. 276, fig. 10a.

  Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.

## Allorisma subcuneatum Meek and Hayden-Continued.

1887. Allorisma subcuneata. Herrick, Bull. Den. Univ., vol. 2, p. 34, pl. 4, figs. 1, 2.

Coal Measures: Flint Ridge, Ohio.

1894. Allorisma subcuneatum. Keyes, Mo. Geol. Surv., vol. 5, p.129, pl. 47, figs, 5a-c.

Upper Coal Measures: Kansas City, Missouri.

## Allorisma subelegans Meek.

1872. Allorisma (Sedgwickia?) subelegans. Meek, U. S. Geol. Surv. Nebr., p. 220, pl. 10, fig. 14.

Upper Coal Measures: Nebraska City, Nebraska.

Coal Measures: Illinois.

#### Allorisma terminale Hall.

1852. Allorisma terminalis. Hall, Stans. Exped. Gt. Salt Lake, p. 413, pl. 2, figs. 4a. b.

Carboniferous: Big Blue River.

Allorisma topekaensis. See Sedgwickia topekensis.

## Allorisma ventricosum Meek.

1871. Allorisma ventrioosa. Meek, Proc. Acad. Nat. Sci. Phil., p. 168. Waverly Group: Rushville, Ohio.

1875. Allorisma ventricosa. Meek, Pal. Ohio, vol. 2, p. 312, pl. 16, figs. 4a, b. Waverly Group: Rushville, Ohio.

1888. Allorisma rentricosa. Herrick, Bull. Den. Univ., vol. 3, p. 73, pl. 8, fig. 6, pl. 7, fig. 33.

Waverly Group: Licking County, Ohio.

#### Allorisma walkeri Weller.

1897. Allorisma walkeri. Weller, Trans. N. Y. Acad. Soi., vol. 16, p. 265, pl. 19, figs. 6, 7.

Batesville S. S.: Batesville, Arkansas.

#### Allorisma winchelli Meek.

1871. Allorisma winchelli. Meek, Proc. Acad. Nat. Sci. Phil., p. 167. Upper Waverly Group: Rushville and Newark, Ohio.

1875. Allorisma winchelli. Meek, Pal. Ohio, vol. 2, p. 311, pl. 16, figs. 3a-c. Upper Waverly Group: Rushville and Newark, Ohio.

1888. Allorisma winchelli. Herrick, Bull. Den. Univ., vol 3, p. 72, pl. 8, figs. 2-4. Waverly Group: Licking County, Ohio.

# Allorisma worthenanum Miller.

1884. Allorisma elongata. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 12. (Not A. elongatum Morton, 1836.) Keokuk L. S.: Warsaw, Illinois.

1889. Allorisma worthenanum. Miller, N. A. Geol. and Pal., p. 460.

1890. Allorisma elongata. Worthen, Geol. Surv. Ill., vol. 8, p. 133, pl. 19, fig. 10. Keokuk L. S.: Warsaw, Illinois.

## Allorisma (species undetermined).

1866. Allorisma (sp. undt.) Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 350, pl. 27, figs. 9-9a.

Upper Coal Measures: North Branch of Saline Creek, Gallatin County, Illinois.

1887. Allorisma sp. Herrick, Bull. Den. Univ., vol. 2, pl. 1, fig. 22. Coal Measures: Flint Ridge, Ohio.

1887. Allorisma? Herrick, Bull. Den. Univ., vol. 2, pl. 5, fig. 1. Coal Measures: Flint Ridge, Ohio.

# AMBLYSIPHONELLA Steinman, 1882.

#### Amblysiphonella prosseri Clarke.

1897. Amblysiphonella prosseri. Clarke, Am. Geol., vol. 20, p. 391, pl. 23, figs. 1-9. Wabaunsee Formation: Nehawka and Weeping Water, Nebraska.

## AMBOCŒLIA Hall, 1860.

#### Ambocælia gemmula. See Ambocælia planoconvexa.

#### Ambocœlia minuta White.

1862. Ambocælia (Spirifer?) minuta. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 26.

Chemung Group: Burlington, Iowa; Hamburg, Illinois; Hannibal, Missouri.

1894. Ambocalia minuta. Keyes, Mo. Geol. Surv., vol. 5, p. 90. Kinderhook Group: Hannibal, Missouri.

# Ambocœlia planoconvexa Shumard.

1855. Spirifer planoconvexa. Shumard, Geol. Rep. Mo., p. 202.

Upper Coal Measures: On Missouri River, near mouth of Platte River.

1859. Spirifer planoconvexs. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 28.
Upper Coal Measures: Manhattan, Juinata, and Leavenworth, Kausas.

1860. Ambocelia gemmula. McChesney, Desc. New Pal. Foss., p. 41.

Coal Measures: Peoria and Bureau counties, Illinois.

1864. Spirifer (Martinia) planoconvexa. Meek and Hayden, Pal. Up. Mo., p. 20, figs. a-e.

Coal Measures: Manhattan and Upper Mill Creek, Kansas.

1866. Spirifer plano-convexa. Geinitz, Carb. und Dyas in Nebr., p. 42, Tab. 3, figs. 10-18.

Nebraska City, Nebraska.

1868. Martinia planoconvexa. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 34, pl. 1, figs. 3a-c.

Coal Measures: Peoria and Bureau counties, Illinois.

1872. Spirifer [Martinia] planoconvexus. Meek, U. S. Geol. Surv. Nebr., p. 184, pl. 4, figs. 4a, b, pl. 8, figs. 2a, b.

Upper Coal Measures: Nebraska City, Bennetts Mill, Wyoming, Cedar Bluff, Rock Bluff, Plattsmouth, Brownville, Otoe City, Rulo, Bellevue, and Omaha, Nebraska.

Coal Measures: Iowa; Missouri; Kansas; Pittsburg, Pennsylvania; West Virginia.

1874. Spirifera (Martinia) planoconvexa. Derby, Bull. Cornell Univ. (Sci.), vol. 1, No. 2, p. 19, pl. 8, figs. 12, 16, 18; pl. 9, fig. 7.

Coal Measures: Bomjardim and Itaitúba, Brazil, and Pichis River, Peru.

1877. Spirifer (Martinia) planoconvexus. White, U. S. Geog. Surv. w. 100 Merid., vol. 4, p. 135, pl. 10, figs. 3a-c.

Carboniferous: Near Santa Fe, New Mexico; Elko Mountain, Nevada.

1884. Spirifer (Martinia) planoconvexa. White, 13th Rep. Geol. Surv. Ind., -p. 134, pl. 32, figs. 23-24.

Coal Measures: Indiana. Occurs from Virginia to Utah and New Mexico.

1887. Spirifera (Martinia) planoconveza. Herrick, Bull. Den. Univ., vol. 2, p. 46, pl. 1, fig. 12.

Coal Measures: Flint Ridge, Ohio.

1894. Ambocælia planoconvexa. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 31, figs. 14-17.

Coal Measures: Illinois; Kansas.

Bull. 153----6

## Amboccelia planoconvexa Shumard-Continued.

- 1894. Spirifera planoconvexus. Keyes, Mo. Geol. Surv., vol. 5, p. 85. Upper Coal Measures: Kansas City, Missouri.
- 1895. Ambocalia planoconvexa. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 39, figs. 10-15.

Coal Measures: Springfield, Illinois; Manhattan, Kansas.

#### Ambocœlia umbonata Conrad.

- 1842. Orthis umbonata. Conrad, Jour. Acad. Nat. Sci. Phil. (1), vol. 8, p. 264.
- 1867. Ambooælia umbonata. Hall, Pal. N. Y., vol. 4, p. 259, pl. 44, figs. 7-18. Hamilton Group: New York.
- 1888. Martinia umbonata. Herrick, Bull. Den. Univ., vol. 4, pl. 9, fig. 3. Bedford Shale: Central College, Ohio.
- 1889. Ambocælia (umbonata). Herrick, Am. Geol., vol. 3, pl. 4, fig. 3.
- 1895. Martinia umbonata. Herrick, Geol. Surv. Ohio, vol. 7, pl. 20, fig. 3. Bedford Shale: Central College, Ohio.

## (AMMONITES Lamark, 1801.)

Ammonites bellicosus. See Goniatites bellicosus.

Ammonites colubrellus. See Goniatites colubrellus.

Ammonites hildrethi. See Goniatites hildrethi.

Ammonites parkeri. See Popanoceras parkeri.

## AMPHORACRINUS Austin, 1848.

Amphoracrinus americanus. See Agaricocrinus americanus.

#### Amphoracrinus blairi Miller and Gurley.

1896. Amphoracrinus blairi. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 26, pl. 1, figs. 45-50. Burlington Group: Sedalia, Missouri.

#### Amphoracrinus divergens Hall.

- 1860. Actinocrimus divergens. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, p. 36. Burlington L. S.: Burlington, Iowa.
- 1860. Actinocrinus planobasilis. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, p. 19. Burlington L. S.: Burlington, Iowa.
- 1862. Actinocrinus quadrispinus. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 15. Lower Burlington L. S.: Burlington, lowa.
- 1868. Amphoracrinus divergens. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 348.
- 1872. Actinocrinus planobasilis. Hall, Photo. Plates of Crinoids, pl. 4, figs. 10, 11.
- 1873. Amphoracrinus dirergens. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 388, pl. 6, fig. 6.
  Burlington L. S.
- 1873. Amphoracrinus divergens var. multiramosus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 389, pl. 6, figs. 6-6c.
- 1893. Amphoracrinus divergens. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 21, pl. 2, figs. 12, 13.
  Burlington L. S.: Burlington, Iowa.
- 1894. Amphoracrinus divergens. Keyes, Mo. Geol. Surv., vol. 4, p. 166, pl. 22, fig. 4.
  Lower Burlington L. S.: Louisiana, Missouri.
- 1897. Amphoracrinus dirergens. Wachsmuth and Springer, N. Am. Crin. Cam., p. 588, pl. 62, figs. 5, 6a-b, 7a-b, 8a-c, 9, 10.
  - Lower Burlington L. S.: Burlington, Iowa; Lake Valley, New Mexico.

Amphoracrinus divergens var. multiramesus. See Amphoracrinus divergens.

Amphoracrinus inflatus. See Amphoracrinus spinobrachiatus.

# Amphoracrinus jerseyensis Worthen.

1890. Amphoracrinus jerseyensis. Worthen, Geol. Surv. Ill., vol. 8, p. 96, pl. 14, figs 8-8a.

Kinderhook Group: Jersey County, Illinois.

### Amphoracrinus jessiese Miller and Gurley.

1896. Amphoracrinus jessicæ. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 21, pl. 3, figs. 18, 19.
Chouteau L. S.: Sedalia, Missouri.

# Amphoracrinus sampsoni Miller and Gurley.

1896. Amphoracrinus sampsoni. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 27, pl. 1, figs. 28-29.
Chouteau L. S.: Sedalia, Missouri.

## Amphoracrinus sedaliensis Miller and Gurley.

1895. Amphoracrinus sedaliensis. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 54, pl. 5, figs. 34-37.
Chouteau L. S.: Sedalia, Missouri.

## Amphoracrinus spinobrachiatus Hall.

1860. Actinocrinus spinobrachiatus. Hall, Supp. vol. 1, pt. 2, Geol. Rep., Iowa, p. 6. Burlington L. S.: Burlington, Iowa.

1860. Actinocrinus inflatus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, p. 20. Burlington L. S.: Burlington, Iowa.

1873. Amphoracrinus? spinobrachiatus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 389, pl. 6, fig. 5.

Burlington L. S.: Burlington, Iowa.

1893. Amphoracrinus inflatus. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 22, pl. 2, figs. 10, 11.
Burlington L. S.: Burlington, Iowa.

1897. Amphoracrinus spinobrachiatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 591, pl. 62, figs. 1-4.

Lower Burlington L. S.: Burlington, Iowa; Lake Valley, New Mexico.

### Amphoracrinus subturbinatus. See Dorycrinus subturbinatus.

#### Amphoracrinus viminalis Hall.

1864. Actinocrinus viminalis. Hall, 17th Rept. N. Y. State Cab. Nat. Hist., p. 54. Waverly Group: Richfield, Ohio.

1875. Actinocrinus viminalis. Hall and Whittield, Pal. Ohio, vol. 2, p. 165, pl. 11, figs. 12-14.

Waverly Group: Richfield, Ohio.

1897. Amphoracrinus viminalis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 590, pl. 54, fig. 8.

Waverly Group: Richfield, Ohio.

## AMPLEXUS Sowerby, 1814.

# Amplexus bicostatus Miller. See Amplexus fragilis.

#### Amplexus blairi Miller.

1891. Amplanus blairi. Miller, Adv. Sheets 17th Rep. Geol. Surv. Ind., p. 8, pl. 1, fig. 7.

Chouteau L. S.: Near Sedalia, Missouri,

# Amplexus blairi Miller—Continued.

- 1892. Amplexus blairi. Miller, 17th Rep. Geol. Surv. Ind., p. 618, pl. 1, fig. 7. Chouteau L. S.: Near Sedalia, Missouri.
- 1894. Amplexus blairi. Keyes, Mo. Geol. Surv., vol. 4, p. 108, pl. 13, fig. 1. Burlington L. S.: Springfield, Sedalia, and Louisiana, Missouri; Burlington, Iowa.

Kinderhook L. S.: Sedalia, Missouri.

# Amplexus coralloides Sowerby. See Amplexus fragilis and Amplexus (species undetermined).

#### Amplexus corniculum Miller.

- 1891. Amplexus corniculum. Miller, Adv. Sheets 17th Rep. Geol. Surv. Ind., p. 9, pl. 1, figs. 21, 22.
  Chouteau L. S.: Near Sedalia, Missouri.
- 1892. Amplexus corniculum. Miller, 17th Rep. Geol. Surv. Ind., p. 619, pl. 1, figs. 21, 22.
  Chouteau L. S.: Near Sedalia, Missouri.

## Amplexus fragilis White and St. John.

- 1851. Amplexus coralloides. Milne-Edwards and Haime, Monog. des Polyp. Foss., p. 342. (Not A. coralloides Sowerby.)
  Carboniferous: Warsaw, Illinois.
- 1860. Amplexus coralloides. Milne-Edwards, Hist. Nat. des Corall., vol. 3, p. 348. Carboniferous: North America.
- 1868. Amplexus fragilis. White and St. John, Trans. Chicago Acad. Sci., vol. 1, p. 116.

Keokuk L. S.: Near Keokuk, Iowa.

- 1891. Amplexus bicostatus. Miller, Adv. Sheets 17th Rep. Geol. Surv. Ind., p. 8, pl. 1, fig. 10.
  Burlington Group: Near Sedalia, Missouri.
- 1892. Amplexus bicostatus. Miller, 17th Rep. Geol. Surv. Ind., p. 618, pl. 1, fig. 10.
  Burlington Group: Near Sedalia, Missouri.
- 1894. Amplexus fragilis. Keyes, Mo. Geol. Surv., vol. 4, p. 109. Burlington L. S.: Sedalia and Louisiana, Missouri. Keokuk L. S.: Boonville, Missouri; Keokuk, Iowa.

#### Amplexus geniculatus Worthen.

1890. Amplexus geniculatus. Worthen, Geol. Surv. Ill., vol. 8, p. 82, pl. 10, figs. 7, 7a. Chester L. S.: Pope County, Illinois.

# Amplexus rockfordensis Miller and Gurley.

1897. Amplexus (†) rockfordensis. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 53, pl. 3, figs. 22, 23. Kinderhook Group: Rockford, Indiana.

#### Amplexus yandelli Milne-Edwards and Haime.

- 1851. Amplexus yandelli. Milne-Edwards and Haime, Monog. des Polyp. Foss., p. 344, pl. 3, figs. 2, 2a.
  Devonian: Falls of the Ohio.
- 1860. Amplexus yandelli. Milne-Edwards, Hist. Nat. des Corall., vol. 3, p. 349. Devonian: Falls of the Ohio.
- 1876. Amplexus yandelli. Rominger, Geol. Surv. Mich., vol. 3, pt. 2, p. 155, pl. 54. Devonian: Ann Arbor, Michigan (Drift); Falls of the Ohio.
- 1894. Amplecus yandelli? Keyes, Mo. Geol. Surv., vol. 4, p. 108, pl. 13, fig. 2. Chouteau L. S.: Curryville, Missouri.

#### Amplexus zaphrentiformis White.

1876. Amplerus zaphrentiformis. White, Powell's Geol. Rep. Uinta Mts., p. 107.

Lower Aubrey Group: Split Mountain Canyon, and near Echo Park, Utah.

# implexus zaphrentiformis White-Continued.

1880. Amplexus zaphrentiformis. White, Cont. to Pal., No. 6, p. 120, pl. 33, figs. 1a, d.

Lower Aubrey Group: Split Mountain Canyon, and near Echo Park,

Green River, where that stream traverses the Uinta mountain chain.

## Amplexus (species undetermined).

1858. Amplexus coralloides? Marcou, Geol. N. A., p. 53. Mountain L. S.: Pecos Village, New Mexico.

## AMPULLARIA Lamark, 1801.

#### Impullaria powelli Walcott.

1883. Ampullaria? Powelli. Walcott, Science, vol. 2, p. 808, figs. 3, 3a. Base of Carboniferous: Eureka District, Nevada.

1884. Ampullaria ? Powelli. Walcott, Pal. Eureka Dist., p. 261, figs. 4, 5.
Lower Carboniferous: Eureka District, Nevada.

# AMYNILYSPES Scudder, 1885.

#### Imynilyspes wortheni Scudder.

1882. Amynilyspes Wortheni. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 178, pl. 13, figs. 1-4, 9.

Carboniferous: Mazon Creek, Illinois.

1890. Amynilyspes Wortheni. Soudder, Foss. Insc. N. A., vol. 1, p. 230, pl. 10, figs. 1-4, 9.

Carboniferous: Mazon Creek, Illinois.

#### ANATINA Lamark, 1809.

### Anatina leda Hall.

1860. Anatina leda. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 110. Goniatite, L. S.: Rockford, Indiana.

#### (ANODONTA Lamark, 1799.)

## Anodonta abyssina Morton.)

1836. Anondota? abyssina. Morton, Am. Jour. Sci. (1), vol. 29, p. 149, pl. 1, figs. 22, 23.

Coal Measures: Ohio Valley.

#### (ANCILLA Lamark, 1799.)

Ancella crassicollis Owen. See Capulus equilateralis.

# ANISOPHYLLUM Edwards and Haime, 1851.

# Inisophyllum? iovaensis Worthen.

1890. Anisophyllum? iovaensis. Worthen, Geol. Surv. Ill., vol. 8, p. 80, pl. 9, fig. 7. St. Louis L. S.: Pella, Iowa.

#### ANISOTRYPA Ulrich, 1883.

#### Inisotrypa fistulosa Ulrich.

1890. Anisotrypa fistulosa. Ulrich, Geol. Surv. Ill., vol. 8, p. 448, pl. 72, figs. 6-6c. St. Louis Group: Pella, Iowa.

#### Inisotrypa ramulosa Ulrich.

1890. Anisotrypa ramulosa. Ulrich, Geol. Surv. Ill., vol. 8, p. 449, pl. 72, figs. 7-7a. St. Louis Group: Pella, Iowa.

#### Anisotrypa solida Ulrich.

- 1890. Anisotrypa solida. Ulrich, Geol. Surv. Ill., vol. 8, p. 449, pl. 72, figs. 9-9e. Chester Group: Sloan's Valley, Pulaski County, Kentucky.
- 1894. Anisotrypa solida. Keyes, Mo. Geol. Surv., vol. 5, p. 16. Kaskaskia L. S.: Ste. Genevieve County, Missouri; Chester, Illinois.

#### Anisotrypa symmetrica Ulrich.

1883. Anisotrypa symmetrica. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 6, p. 276, pl. 13, figs. 5-5c.

Kaskaskia Group: Gravson Springs and Tateville, Kentucky.

## ANOMPHALUS Meek and Worthen, 1866.

## Anomphalus meeki Bradley. See Dawsonella meeki.

# Anomphalus rotulus Meek and Worthen.

- 1866. Anomphalus rotulus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 268. Lower Coal Measures: Hodge's Creek, Macoupin County, Illinois.
- 1873. Anomphalus rotulus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 597, pl. 29, fig. 10.
  - Coal Measures: Hodge's Creek, Macoupin County, Illinois.
- 1874. Anomphalus rotulus. Meek, Am. Jour. Sci. (3), vol. 7, p. 583. 1888. Anomphalus rotulus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 241. Lower Coal Measures: Des Moines, Iowa.
- 1894. Anomphalus rotulus. Keyes, Mo. Geol. Surv., vol. 5. p. 154. Lower Coal Measures: Clinton, Missouri.

# ANTHRACERPES Meek and Worthen, 1865.

## Anthracerpes typus Meek and Worthen.

- 1865. Anthracerpes typus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 51. Coal Measures: Morris, Illinois.
- 1866. Anthracerpes typus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 409, pl. 32, figs. 1-1a.
  - Lower Coal Measures: Morris, Grundy County, Illinois.
- 1882. Anthracerpes typus. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 180. Carboniferous: Mazon Creek, Illinois.
- 1890. Anthracerpes typus. Scudder, Foss. Insc. N. A., vol. 1, p. 232. Carboniferous: Mazon Creek, Illinois.

#### ANTHRACOBLATTINA Scudder, 1879.

#### Anthracoblattina americana Scudder.

1895. Anthracoblattina americana. Scudder, Bull. U. S. Gool. Surv., No. 124, p. 129, pl. 11, fig. 7.

Lower Coal Measures: Near Clinton, Missouri.

#### Anthracoblattina virginiensis Scudder.

1895. Anthracoblattina rirginiensis. Scudder, Bull. U. S. Geol. Surv., No. 124, p. 130, pl. 11, fig. 8.

Lower Permian: Cassville, West Virginia.

## ANTHRACOMARTUS Karsch, 1882.

### Anthracomartus pustulatus Scudder.

- 1884. Anthracomartus pustulatus. Scudder, Proc. Am. Acad. Arts and Sci., vol. 20, p. 18.
  - Carboniferous: Mazon Creek, Illinois.
- 1890, Anthracomartus pustulatus. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 452, pl. 40, figs. 5, 8.

Carboniferous: Mazon Creek, Illinois.

## Anthracomartus pustulatus Scudder-Continued.

1890. Anthracomartus pustulatus. Scudder, Foss. Insc. N. A., vol. 1, p. 428, pl. 32, figs. 5, 8.

Carboniferous: Mazon Creek, Illinois.

#### Anthracomartus trilobitus Scudder.

1884. Anthracomartus trilobitus. Scudder, Proc. Am. Acad. Arts and Sci., vol. 20, p. 17.

Carboniferous: Fayetteville, Arkansas.

1890. Anthracomartus trilobitus. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 451, pl. 39, figs. 7-10.

Carboniferous: Fayetteville, Arkansas.

1890. Anthracomartus trilobitus. Scudder, Foss. Incs. N. A., vol. 1, p. 427, pl. 31, figs. 7-10.

Carboniferous: Fayetteville, Arkansas.

#### Anthracomartus woodruffi Scudder.

1893. Anthracomartus Woodruff. Scudder, Bull. U. S. Geol. Surv., No. 101, p. 9, pl. 1, fig. f.

Carboniferous: Pawtucket, Rhode Island.

#### ANTHRACOMYA Salter, 1861.

#### Anthracomya arenacea Dawson.

1868. Naiadites arenacea. Dawson, Acad. Geol., p. 205, fig. 45.

Coal Measures: Joggins, Nova Scotia.

1894. Anthracomya arenacea. Hind, Quart. Jour. Geol. Soc. Lond., vol. 50, pl. 20, figs. 4-6.

Coal Measures: Joggins, Nova Scotia.

1894. Anthracomya arenacea. Dawson, Rev. Biv. Moll. Coal-Form. Nova Scotia, p. 12, fig. 10.

Coal Measures: Pictou and Sydney.

#### Anthracomya elongata Dawson.

\*1860. Naiadites elongata. Dawson, Supp. Acad. Geol., p. 43. Coal Measures: Nova Scotia.

1863. Anthracomya elongata. Salter, Quart. Jour. Geol. Soc. Lond., vol. 19, p. 79, fig. 1.

Coal Measures: Nova Scotia.

1868. Natadites (Anthracomya) elongata. Dawson, Acad. Geol., p. 204, fig. 43.
Middle Coal Measures: Joggins and Sidney, Nova Scotia.

1883. Naiadites elongata. White, 3d Ann. Rep. U. S. Geol. Surv., p. 425, pl. 2, fig. 16.

1894. Anthracomya elongata. Hind, Quart. Jour. Geol. Soc. Lond., vol. 50, p. 441, pl. 20, figs. 7-11.

1894. Anthracomya etongata. Dawson, Rev. Biv. Moll. Coal-Form. Nova Scotia, p. 10, figs. 6-8.

Coal Measures: South Joggins, Picton, Sydney, Glace Bay, Mabon, Riversdale, Swan Creek, and Parrsboro, Nova Scotia.

# Anthracomya lævis Dawson.

\*1860. Naiadites lavis. Dawson, Supp. Acad. Geol.

Coal Measures: Nova Scotia.

1863. Naiadites lævis. Salter, Quart. Jour. Geol. Soc. Lond., vol. 19, p. 79, fig. 2.

Coal Measures: Nova Scotia.

1868. Naiadites (Anthracoptera) lavis. Dawson, Acad. Geol., p. 204, fig. 44. Middle Coal Messures: Joggins, Nova Scotia.

#### Anthracomya lævis Dawson—Continued.

- 1883. Naiadites lævis. White, 3d Ann. Rep. U. S. Geol. Surv., p. 425, pl. 2, fig. 17.
- 1894. Anthracomya lævis. Hind, Quart. Jour. Geol. Soc. Lond., vol. 50, p. 442, pl. 20, fig. 12.
- 1894. Anthracomya læris. Dawson, Rev. Biv. Moll. Coal-Form. Nova Scotia, p. 11, fig. 9.
  Coal Measures: South Joggins, Nova Scotia.

#### Anthracomya obtenta Dawson.

- 1868. Naiadites obtusa. Dawson, Acad. Geol., p. 205 (name preoccupied). Lower Coal Measures: McLellan's Brook, Pictou.
- 1894. Anthracomya obtenta. Dawson, Rev. Biv. Moll. Coal-Form. Nova Scotia, p. 13, figs. 12-13.

Coal Measures: McLellan's Brook, Pictou, and Mabon, Cape Breton.

## Anthracomya ovalis Dawson.

\*1860. Naiadites ovalis. Dawson, Supp. Acad. Gool.

Coal Measures: Nova Scotia.

1868. Naiadites oralis. Dawson, Acad. Geol., p. 205. Coal Measures: Joggins, Nova Scotia.

1894. Anthracomya ovalis. Hind, Quart. Jour. Geol. Soc. Lond., vol. 50, p. 442, pl. 20, fig. 13.

1894. Anthracomya ovalis. Dawson, Rev. Biv. Moll. Coal-Form. Nova Scotia, p. 13, fig. 11.

Lower Carboniferous and Coal Measures: South Joggins, Riversdale, and Parrsboro, Nova Scotia.

# (ANTHRAUOPTERA Salter, 1862.)

Anthracoptera carbonaria. See Naiadites carbonaria.

Anthracoptera fragilis. See Naiadites fragilis.

Anthracoptera polita. See Naiadites polita.

#### ANTHRACOPUPA Whitfield, 1881.

# Anthracopupa ohioensis Whitfield.

1881. Anthracopupa Ohioensis. Whitfield, Am. Jour. Sci. (3), vol. 21, p. 126, figs. 1-4.

Coal Measures: near Marietta, Ohio.

1883. Anthracopupa ohioensis. White, 3d Ann. Rep. U. S. Geol. Surv., p. 456, pl. 2, figs. 5-8.

1891. Anthracopupa Ohioensis. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 607, pl. 16, figs. 15-17.

Coal Measures: Marietta, Ohio.

1895. Anthracopupa Ohioensis. Whitfield, Geol. Surv. Ohio, vol. 7, p. 491, pl. 12, figs. 15-17.

Coal Measures: Near Marietta, Ohio.

#### (ANTHRACOSIA King, 1844.)

Anthracosia bradorica. See Carbonicola bradorica.

# ANTHRACOTHREMMA Scudder, 1884.

#### Anthracothremma robusta Scudder.

1885. Anthracothremma robusta. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 327, pl. 30, figs. 1, 5, 6.

Carboniferous: Mazon Creek, Illinois.

#### Anthracothremma robusta Scudder—Continued.

1890. Anthracothremma robusta. Scudder, Foss. Insc. N. A., vol. 1, p. 291, pl. 16, figs. 1, 5, 6.

Carboniferous: Mazon Creek, Illinois.

## ANTHRAPALÆMON Salter, 1861.

#### Anthrapalæmon gracilis Meek and Worthen.

1865. Anthrapalæmon gracilis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 50.

Coal Measures: Morris, Illinois.

1866. Anthrapalæmon gracilis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 407, pl. 32, figs. 4-4c.

Lower Coal Measures: Morris, Grundy County, Illinois.

1868. Anthrapalæmen gracilis. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 554, figs. A-B.

Coal Measures.

1884. Anthrapalæmon gracilis. White, 13th Rep. Geol. Surv. Ind., p. 180, pl. 38, figs. 8, 9.

Coal Measures: Grundy County, Illinois.

1885. Anthrapalæmon gracilis. Packard, Am. Nat., vol. 19, p. 880.

Carboniferous: Mazon Creek, Illinois.

1886. Anthrapalæmon gracilis. Packard, Mem. Nat. Acad. Sci., vol. 3, pt. 2, p. 135, pl. 4, figs. 1-6; pl. 7, figs. 4-6.

Carboniferous: Mazon Creek, Illinois.

#### Anthrapalæmon hillianus Dawson.

. 1877. Anthrapalæmon (Palæocarabus) Hilliana. Dawson, Geol. Mag. (2), vol. 4, p. 56, fig. 1.

Carboniferous: South Joggins, Nova Scotia.

1878. Anthracopalæmon (Palæocarabus) Hillianus. Dawson, Supp. to 2d Ed. Acad. Gool., p. 55, fig. 10.

Coal Measures: South Joggins, Nova Scotia.

## AOROCRINUS Wachsmuth and Springer, 1897.

#### Acrocrinus canaliculatus Meek and Worthen.

1869. Dorycrinus canaliculatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 166.

Lower Burlington L. S.: Burlington, Iowa.

1873. Dorycrinus canaliculatus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 381, pl. 6, fig. 4.

Burlington L. S.: Burlington, Iowa.

1897. Acrocrinus canaliculatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 475, pl. 45, figs. 6a, b.

Lower Burlington L. S.: Burlington, Iowa.

### Acrocrinus concavus Meek and Worthen.

1861. Actinocrinus (Amphoracrinus?) concavus. Meek and Worthen, Proc. Acad.
Nat. Sci. Phil., p. 132.

Burlington L. S.: Burlington, Iowa.

1865. Actinocrinus (Sphærocrinus) concavus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 154.

1866. Calorinus concavus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 215, pl. 15, figs. 10a-c.

Burlington L. S.: Burlington, Iowa.

1897. Acroorinus concavus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 482, pl. 42, figs. 13a-c.

Lower Burlington L. S.: Burlington, Iowa.

## Acrocrinus elegans Miller.

- 1892. Doryorinus elegans. Miller, Adv. Sheets 18th Rep. Geol. Surv. Jud., p. 17, pl. 3, figs. 4, 5.
  - Burlington Group: Near Sedalis, Missouri.
- 1894. Doryorinus elegans. Miller, 18th Rep. Geol. Surv. Ind., p. 271, pl. 3, figs. 4, 5. Burlington Group: Near Sedalia, Missouri.
- 1894. Dorycrinus elegans. Keyes, Mo. Geol. Surv., vol. 4, p. 170. Burlington L. S.: Sedalia, Missouri.
- 1897. Acrocrinus elegans. Wachsmuth and Springer, N. Am. Crin. Cam., p. 480, pl. 34, figs. 7a, b.
  Upper Burlington L. S.: Near Sedalia, Missouri.

# Acrocrinus helice Hall.

- 1864. Actinocrinus helice. Hall, 17th Rep. N. Y. State Cab. Nat. Hist., p. 53. Waverly Group: Richfield, Ohio.
- 1864. Actinocrinus helics var. eris. Hall, 17th Rep. N. Y. State Cab. Nat. Hist., p. 53.
  - Waverly Group: Richfield, Ohio.
- 1875. Actinocrinus helice. Hall and Whitfield, Pal. Ohio, vol. 2, p. 162, pl. 11, figs. 5-8.
  - Waverly Group: Richfield, Ohio.
- 1875. Actinocrinus Eris. Hall and Whitfield, Pal. Ohio, vol. 2, p. 164, pl. 11, figs. 9, 10.
  - Waverly Group: Richfield, Ohio.
- 1897. Aorocrimus helice. Wachsmuth and Springer, N. Am. Crin. Cam., p. 481, pl. 45, figs. 2, 5.
  Waverly S. S.: Richfield and Royalton, Ohio.

#### Acrocrinus immaturus Wachsmuth and Springer.

- 1890. Dorycrinus immaturus. Wachsmuth and Springer, Geol. Surv. Ill., vol. 8, p. 175, pl. 16, fig. 5; pl. 17, figs. 6, 17. Kinderhook Group: Legrand, Iowa.
- 1897. Aerocrinus immaturus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 471, pl. 45, figs. 4a, b. Kinderhook Group: Legrand, Marshall County, Iowa.

# Acrocrinus parvibasis Wachsmuth and Springer.

- 1890. Doryoriaus parribasis. Wachsmuth and Springer, Gool. Surv. Ill., vol. 8, p. 177, pl. 17, figs. 7, 9. 9a.
  - Kinderhook Group: Legrand, Iowa.
- 1897. Aerocrinus parribasis. Wachsmuth and Springer. N. Am. Crin. Cam., p. 473, pl. 45, figs. 3a, b. Kinderhook Group: Legrand, Marshall County, Iowa.

#### Acrocrinus parvus Shumard.

- 1865. Actinocrinus parrus. Schumard, Geol. Rep. Mo., p. 193, pl. A, fig. 9. St. Louis L. S.: St. Louis, Missouri.
- 1858. Actinocrinus symmetricus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 574, pl. 10, figs. 8a-b.
  - Burlington L. S.: Burlington, Iowa.
- 1860. Actinocrinus symmetricus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, pl. 2, fig. 10.
- 1891. Dorycrinus amornus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 35, pl. 5, figs. 5, 6.
  - Burlington Group: Sedalia, Missouri.
- 1894. Dorycrinus parrus. Keyes, Mo. Geol. Surv., vol. 4, p. 171. Upper Burlington L. S.: Palmyra, Sedalia, Ash Grove, and St. Louis County, Missouri.

## Acrocrinus parvus Shumard—Continued.

1897. Acrocrinus parvus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 477, pl. 45, fig. 11a, b.

Upper Burlington L. S.: Burlington, Iowa.

#### Acrocrinus radiatus Wachsmuth and Springer.

1890. Dorycrinus radiatus. Wachsmuth and Springer, Geol. Surv. Ill., vol. 8, p. 176, pl. 17, figs. 5, 5a.

Kinderhook Group: Legrand, Iowa.

1897. Acrocrinus radiatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 472, pl. 45, fig. 1.

Kinderhook Group: Legrand, Marshall County, Iowa.

# Acrocrinus spinosulus Hall.

1860. Actinocrinus spinosulus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, p. 52. Keokuk L. S.: Nauvoo, Illinois.

1875. Dorycrinus Kelloggi. Worthen, Geol. Surv. Ill., vol. 6, p. 513, pl. 29, fig. 8. Keokuk L. S.: Keokuk, Iowa.

1894. Dorycrinus kelloggi. Keyes, Mo. Geol, Surv., vol. 4, p. 173. Keokuk L. S.: Keokuk, Iowa.

1897. Acrocrinus spinosulus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 478, pl. 43, fig. 4; pl. 44, fig. 8a, b. Keokuk Group: Keokuk, Iowa; Nauvoo, Illinois.

#### Acrocrinus subaculeatus Hall.

1858. Actinocrinus subaculeatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 570, pl. 10, figs. 2a, b.
Burlington L. S.: Burlington, Iowa.

1894. Dorycrinus subaculeatus. Keyes, Mo. Geol. Surv., vol. 4, p. 170. Lower Burlington L. S.: Louisiana, Missouri.

1897. Acrocrinus subaculeatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 476, pl. 45, figs. 7a, b.

Lower Burlington L. S.: Burlington, Iowa.

#### APHELÆCERAS Hvatt, 1883.

## Aphelæceras disciformis Meek and Worthen.

1865. Nautilus (Discites) disciformis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 261.

Keokuk Group: Niota, Illinois.

1873. Nautilus (Discites) disciformis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 522, pl. 18, fig. 1.

Keokuk Group: Niota, Hancock County, Illinois.

1893. Aphelaceras (Disc.) disciforme. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 413.

## ARCA Linne, 1758.

#### Arca carbonaria. See Macrodon carbonarius.

#### Arca cuspidata Swallow.

1858. Arca cuspidata. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 209. Upper Coal Measures: Near Burlingame, Kansas.

#### Arca modesta Winchell.

1863. Arca modesta. Winchell, Proc. Acad. Nat. Sci. Phil., p. 15. Yellow S. S.: Burlington, Iowa.

#### Arca ornata Herrick.

1888. Area ornata. Herrick, Bull. Den. Univ., vol. 3, p. 83, pl. 9, fig. 18. Waverly Group: Licking County, Ohio.

## Arca punctifera Dawson.

1868. Arca punctifer. Dawson, Acad. Geol., p. 304. Carboniferous L. S.: Windsor, Nova Scotia.

Arca striata. See Macrodon tenuistriata.

## ARCHÆOCARIS Meek, 1872.

#### Archæocaris vermiformis Meek.

1872. Archæocaris vermiformis. Meek, Proc. Acad. Nat. Sci. Phil. for 1871, p. 335. Base of Waverly Group: Danville, Kentucky.

1875. Archæocaris vermiformis. Meek, Pal. Ohio, vol. 2, p. 321, pl. 18, fig. 7. Waverly Group: Danville, Kentucky.

# ARCHÆOCIDARIS McCoy, 1844.

#### Archæocidaris aculeata Shumard.

1858. Archæocidaris verneuiliana. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 180. (Not A. verneuiliana King.)

Middle Permian: West of Council Grove, Kansas.

1858. Archaocidaris aculeatus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 223. Upper Coal Measures: Verdigris River valley; Santa Fé road, near Rock Creek; 25 miles west of Council Grove, in valley of Cottonwood Creek, Kansas; Fort Belknap, Texas.

1894. Archæocidaris aculeata. Keyes, Mo. Geol. Surv., vol. 4, p. 130, pl. 15, fig. 3. Upper Coal Measures: New Point, Jackson County, Missouri.

1895. Archæocidaris aculeata. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 188, pl. 18, fig. 3.
Upper Coal Measures: New Point, Jackson County, Missouri.

#### Archæocidaris agassizi Hall.

1858. Archaeocidaris agassizi. Hall, Geol. Iowa, vol. 1, pt. 2, p. 698, pl. 26, figs. 1a-d.

Burlington L. S.: Burlington, Iowa.

1894. Archæocidaris agassizi. Keyes, Mo. Geol. Surv., vol. 4, p. 127, pl. 15, fig. 5. Burlington L. S.: Hannibal, Missouri; Burlington, Iowa.

1895. Archæocidaris agassizi. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 185, pl. 18, fig. 5.

Burlington L. S.: Hannibal, Missouri; Burlington, Iowa. 1896. Archaeocidaris agassizi. Jackson, Bull. Geol. Soc. Am., vol. 7, p. 213.

#### Archæocidaris biangulata Shumard.

1858. Archæocidaris biangulatus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 224.

Middle Coal Measures: Lexington, Missouri.

1894. Archæocidaris biangulata. Keyes, Mo. Geol. Surv., vol. 4, p. 130, pl. 15, figs. 1a-c.

Upper Coal Measures: Lexington and Kansas City, Missouri.

1895. Archæocidaris biangulata. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 189, pl. 15, figs. 1a-c.

Upper Coal Measures: Lexington and Kansas City, Missouri.

#### Archæocidaris cratis White.

1876. Archæocidaris cratis. White, Powell's Rep. Geol. Uinta Mts., p. 109.

Lower Aubrey Group: Confluence of Grand and Green Rivers. Utah.

1880. Archwoodaris cratis. White, Cont. to Inv. Pal., No. 6, p. 130, pl. 33, fig. 2a.
Middle Carboniferous: Confluence of Grand and Green rivers, Utah.

1895. Archæocidaris cratis. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 188. Coal Measures (Lower Aubrey): Utah.

#### Archmodidaris dininni White.

1880. Archæocidaris dinimni. White, Proc. U. S. Nat. Mus., vol. 2, p. 260, pl. 1, figs. 13-15.

Upper Coal Measures: Near Teoumseh, Nebraska; western Iowa.

1880. Archæocidaris dininni. White, Cont. to Inv. Pal., No. 6, p. 131, pl. 35, figs. 6a-c.

Upper Coal Measures: Tecumseh, Nebraska.

1894. Archaeoidaris dininni. Keyes, Mo. Geol. Surv., vol. 4, p. 130, pl. 15, figs. 6a-c.

Upper Coal Measures: Kansas City, Missouri.

1895. Archaocidaris dininni. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 190, pl. 18, figs. 6a-c.

Upper Coal Measures: Kansas City, Missouri; Tecumseh, Nebraska; Red Oak, Iowa.

## Archæocidaris edgarensis Worthen and Miller.

1883. Archæocidaris edgarensis. Worthen and Miller, Geol. Surv. Ill., vol. 7, p. 337, pl. 30, figs. 15a-c.

Upper Coal Measures: 1 mile east of Baldwinsville, Edgar County, Illinois.

1891. Archæocidaris edgarensis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 245.
Lower Coal Measures: Des Moines, Iowa.

## Archæocidaris gracilis Newberry.

1861. Archæccidaris gracilis. Newberry, Ives' Colo. Expl. Exped., p. 117, pl. 1, figs. 4, 4a.

Upper Carboniferous L. S.: Banks of Colorado River.

#### Archæocidaris hallianus. See Eocidaris hallanus.

#### Archmodidaris illinoiensis Worthen and Miller.

1883. Archæocidaris illinoiensis. Worthen and Miller, Geol. Surv. Ill., vol. 7, p. 338, pl. 31, figs. 1a-b.

St. Louis L. S. (black beds): Near Illinois Furnace, Hardin County, Illinois.

1895. Archæocidaris illinoisensis. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 187. St. Louis L. S.: Hardin County, Illinois.

#### Archæocidaris keokuk Hall.

1858. Archæocidaris keokuk. Hall, Geol. Iowa, vol. 1, pt. 2, p. 699, pl. 26, figs. 2a, b. Keokuk L. S.: Warsaw, Illinois.

1894. Archæocidaris keokuk. Keyes, Mo. Geol. Surv., vol. 4, p. 128. Keokuk L. S.: Clark County, Missouri (†); Warsaw, Illinois.

1895. Archæocidaris keokuk. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 186. Keokuk L. S.: Clark County and Boonville, Missouri; Warsaw, Illinois.

#### Archæocidaris legrandensis Miller and Gurley.

1890. Archæocidaris legrandensis. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 373, pl. 10, fig. 15.
Kinderhook Group: Le Grand, Iowa.

1895. Archæocidaris legrandensis. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 185. Kinderhook L. S.: Le Grand, Marshall County, Iowa.

#### Archæocidaris longispina Newberry.

1861. Archæocidaris longispinus. Newberry, Ives' Colo. Expl. Exped., pt. 3, p. 116, pl. 1, figs. 1, 1a.
Upper Carboniferous L. S.: Banks of Colorado River.

1895. Archæocidaris longispinus. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 191. Carboniferous: Junction of the two Colorado rivers, Arizona.

#### Archæocidaris megastylus Shumard.

1858. Archæooidaris megastylus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 225.

### Archæocidaris megastylus Shumard-Continued.

- 1858. Upper Coal Measures: Headwaters of Verdigris River, and in valley of Cottonwood Creek, Kansas.
- 1894. Archæocidaris megastylus. Keyes, Mo. Geol. Surv., vol. 4, p. 129, pl. 15, figs. 2a, b.

Upper Coal Measures: Independence, Missouri.

1895. Archæocidaris megastylus. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 189, pl. 18, figs. 2a, b.

Upper Coal Measures: Independence, Jackson County, Missouri.

#### Archæocidaris mucronata Meek and Worthen.

1860. Archæocidaris muoronata. Meek and Worthen, Proc. Acad. Nat. Sci., Phil., p. 395.

Chester L. S.: Liberty, Randolph County, Illinois.

1866. Archæooidaris mucronata. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 295, pl. 23, figs. 3a-c.

Chester Group: Liberty, Randolph County, Illinois.

1895. Archæocidaris mucronata. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 188. Kaskaskia L. S.: Liberty and Chester, Illinois.

#### Archæocidaris newberryi Hambach.

1884. Archæocidaris newberryi. Hambach, Trans. St. Louis Acad. Sci., vol. 4, p. 551, pl. D, fig. 1.

St. Louis L. S.: St. Louis, Missouri.

1894. Archæocidaris newborryi. Keyes, Mo. Geol. Surv., vol. 4, p. 129.

St. Louis L. S.: St. Louis, Missouri.

-1895. Archæocidaris newberryi. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 187. St. Louis L. S.: St. Louis, Missouri.

#### Archæocidaris norwoodi Hall.

1858. Archæocidaris norwoodi. Hall, Geol. Iowa, vol. 1, pt. 2, p. 701, pl. 26, figs. 5a-e.

Kaskuskia L. S.: Chester, Illinois.

1894. Archæocidaris norwoodi. Keyes, Mo. Geol. Surv., vol. 4, p. 129. Kaskaskia L. S.: Kaskaskia, Illinois; near St. Louis, Missouri.

1895. Archæocidaris norwoodi. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 188. Kaskaskia L. S.: Chester, Illinois.

#### Archæocidaris ornata Newberry.

1861. Archæocidaris ornatus. Newberry, Ives' Colo. Expl. Exped., p. 116, pl. 1, figs. 2, 3, 3a.

Upper Carboniferous L. S.: Banks of Colorado River.

1877. Archæocidaris ornatus. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 104, pl. 6, fig. 7.

Carboniferous: Ojo del Oso, near Fort Wingate, New Mexico.

1895. Archæocidaris ornatus. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 191. Carboniferous: Ojo del Oso, New Mexico.

# Archæocidaris shumardana Hall.

1858. Archæooidaris shumardana. Hall, Geol. Iowa, vol. 1, pt. 2, p. 699, pl. 26, figs. 3a-d.

Warsaw L. S.: Warsaw, Illinois.

1884. Archæocidaris, cf. Shumardana. Walcott, Pal. Eureka Dist., p. 212.

Lower Carboniferous L. S.: Eureka District, Nevada.

1894. Archæocidaris shumardana. Keyes, Mo. Geol. Surv., vol. 4, p. 128. Keokuk L. S.: La Grange, Missouri.

1895. Archæocidaris shumardiana. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 186.

Keokuk L. S.: La Grange, Lewis County, Missouri; Warsaw, Illinois.

## Archmocidaris spinoclavata Worthen and Miller.

- 1873. Archæooidaris? (sp. undet.). Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 24, figs. 13a-c.
  Coal Measures.
- 1883. Archæocidaris spino-clavatus. Worthen and Miller, Geol. Surv. Ill., vol. 7, p. 337, pl. 30, figs. 14a-e.
- Middle and Lower Coal Measures: St. Clair and Marshall counties, Illinois.

  1895. Archaeoidaris spinoclavatus. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 190.

  Upper Coal Measures: St. Clair and Marshall counties, Illinois.

#### Archeocidaris triplex White.

- 1881. Archæocidaris triplex. White, U. S. Geog. Surv., W. 100 Merid., vol. 3, Supp., Appendix, p. xxii, pl. 4, figs. 3a-c. Carboniferous: New Mexico.
- 1895. Archwooldaris triplex. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 191. Upper Coal Messures: New Mexico.

## Archæocidaris triserrata Meek.

- 1872. Archaeocidaris? triserrata. Meek, U. S. Geol. Surv. Nebr., p. 151, pl. 1, figs. 6a-c.
  - Upper Coal Measures: Omaha, and 3 miles above mouth of Platte River, Nebraska.
  - Coal Measures: Vermilion County, Illinois.
- 1895. Archæocidaris triserata Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 190. Upper Coal Measures: Nebraska City, Nebraska; Kansas City, Missouri.

# Archmocidaris trudifer White.

- 1874. Archaocidaris trudifer. White, Prelim. Rep. Inv. Foss., p. 17. Carboniferous (Coal Measures): Camp Apache, Arizona
- 1876. Archœocidaris trudifer. White, Powell's Rep. Geol. Uinta Mts., p. 89.

  Lower Aubrey Group: Confluence of Grand and Green Rivers, Utah.
- 1877. Archæocidaris trudifer. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 104, pl. 6, figs. 8a, b.
  - Carboniferous (Red Wall L. S): Camp Apache, Arizona.
- 1895. Archæocidaris trudifor. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 191. Lower Carboniforous: "Camp Apache," Arizona.

#### Archæocidaris verneuiliana. See Archæocidaris aculeata.

#### Archæocidaris wortheni Hall.

- 1858. Archæocidaris wortheni. Hall, Geol. Iowa, vol. 1, pt. 2, p. 700, pl. 26, figs. 4a-g.
  St. Louis L. S.: Near St. Louis, Missouri.
- 1884. Archæocidaris of. wortheni. Walcott, Pal. Eureka Dist., p. 212. Lower Carboniferous L. S.: Eureka District, Nevada.
- 1894. Archæocidaris wortheni. Keyes, Mo. Geol. Surv., vol. 4, p. 128, pl. 16, figs. 3a, b.
  - St Louis L. S.: St. Louis, Missouri.
- 1895. Arohæocidaris wortheni. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 187, pl. 20, figs. 3a, b.
  St. Louis L. S.: St. Louis. Missouri.
- 1896. Archæocidaris wortheni. Jackson, Bull. Geol. Soc. Am., vol. 7, p. 214, pl. 8, figs. 43-46.

#### St. Louis Group: St. Louis, Missouri.

#### Archæocidaris (species undetermined).

- 1859. Archæocidaris ——? Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 25. Upper Coal Measures: Cottonwood Creek, Kansas.
- 1859. Archaeoidaris ——? Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 25.
  Upper Coal Measures: Cottonwood Creek and Manhattan, Kansas.
- 1874. Archaecidaris? (sp. undet.) Meek, Am. Jour. Sci. (3), vol. 7, p. 486.

# ARCHEGOGRYLLUS Scudder, 1868.

## Archegogryllus priscus Scudder.

- 1868. Archegogryllus priscus. Scudder, Proc. Bost. Soc. Nat. Hist., vol. 11, p. 402. Coal Measures: Tallmadge, Ohio.
- 1885. Archegogryllus priacus. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 323, pl. 29, figs. 2, 3.

Carboniferous: Tallmadge, Ohio.

1890. Archegogryllus priscus. Soudder, Foss. Insc. N. A., vol. 1, p. 287, pl. 15, figs. 2, 3.

Carboniferous: Tallmadge, Ohio.

# ARCHIMEDES Le Sueur, 1842.

#### Archimedes archimedes Owen.

1852. Retepora Archimedes. Owen, Geol. Rep. Wis., Iowa, and Minn., tab. 4, figs. 1, 1a.

Near top of lower series of Carboniferous L. S.: Keokuk Rapids, Iowa.

#### Archimedes communis Ulrich.

1890. Archimedes communis. Ulrich, Geol. Surv. Ill., vol. 8, p. 573, pl. 63, figs. 1-1d. Chester Group: Most localities, especially at Sloan's Valley, Pulaski County, Kentucky.

## Archimedes compactus Ulrich.

1890. Archimedes compactus. Ulrich, Geol. Surv. Ill., vol. 8, p. 572, pl. 63, figs. 2-2e. Chester Group: Sloan's Valley, Kentucky.

#### Archimedes distans Ulrich.

1890. Archimedes distans. Ulrich, Geol. Surv. Ill., vol. 8, p. 578, pl. 63, figs. 9-9b. Chester Group: Chester, Illinois; Sloan's Valley, Kentucky.

## Archimedes grandis Ulrich.

1890. Archimedes grandis. Ulrich, Geol. Surv. Ill., vol. 8, p. 569, pl. 63, fig. 10. Keokuk Group: Jersey County, Illinois.

## Archimedes intermedius Ulrich.

1890. Archimedes intermedius. Ulrich, Geol. Surv. Ill., vol. 8, p. 574, pl. 63, fig. 2c. Chester Group: Chester, Illinois; Sloan's Valley, Kentucky.

#### Archimedes invaginatus Ulrich.

1890. Archimedes invaginatus. Ulrich, Geol. Surv. Ill., vol. 8, p. 575, pl. 63, figs. 11a-11c.

Chester Group: Chester, Illinois.

#### Archimedes laxus Hall.

- 1857. Fenestella (Archimedes) laxa. Hall, Proc. Am. Ass. Adv. Sci., vol. 10, p. 178. Kaskaskia L. S.: Chester, Illinois.
- 1882. Archimedes laxa. White, 11th Rep. Geol. Surv. Ind., p. 361, pl. 41, fig. 7. Subcarboniferous: Indiana.
- 1883. Helicopora archimediformis. Claypole, Quart. Jour. Geol. Soc. Lond., vol. 39, p. 34, pl. 4, figs. 3, 4. Kaskaskia Group: Litchfield, Kentucky.
- 1890. Archimedes laxus. Ulrich, Geol. Surv. Ill., vol. 8, p. 580, pl. 63, figs. 15, 15a. Chester Group: Chester, Illinois; Litchfield, Kentucky.
- 1894. Archimedes laxus. Keyes, Mo. Geol. Surv., vol. 5, p. 27. Chester Group: Chester, Illinois.

#### Archimedes meekanus Hall.

1857. Fenestella (Archimedes) Meckana. Hall, Ploc. Am. Ass. Adv. Sci., vol. 10, p. 178.

Kaskaskia L. S.: Chester, Illinois.

## Archimedes meekanus Hall—Continued.

1890. Archimedes meskanus. Ulrich, Geol. Surv. Ill., vol. 8, p. 578, pl. 63, fig. 4.

Chester Group: Chester, Illinois; Sloan's Valley and Grayson Springs,
Kentucky.

## Archimedes negligens Ulrich.

1890. Archimedes negligens. Ulrich, Geol. Surv. Ill., vol. 8, p. 569, pl. 63, figs. 7, 7a. Keokuk Group: Bentonsport and Keokuk, Iowa.

#### Archimedes owenanus Hall.

1857. Fenestella (Archimedes) Owenana. Hall, Proc. Am. Ass. Adv Sci., vol. 10, p. 178.

Keokuk L. S.: Keokuk, Iowa; Appanoose, Illinois.

1890. Archimedes overanus. Ulrich, Geol. Surv. Ill., vol. 8, p. 570, pl. 63, figs. 6-6c. Keokuk Group: Keokuk, Iowa; Appanoose, and 3 miles northeast of Quincy, Illinois.

1894. Archimedes owenanus. Keyes, Mo. Geol. Surv., vol. 5, p. 26, pl. 33, fig. 2. Keokuk L. S.: St. Francisville, Missouri.

#### Archimedes perminimus Ulrich.

1890. Archimedes perminimus. Ulrich, Geol. Surv. Ill., vol. 8, p. 572, pl. 63, figs. 11, 13.

Chester Group: Chester, Illinois.

#### Archimodes proutanus Ulrich.

1890. Archimedes proutanus. Ulrich, Geol. Surv. Ill., vol. 8, p. 576, pl. 63, figs. 3, 3d, 11; 11b.

Chester Group: Sloan's Valley, Kentucky; Chester, Illinois.

## Archimedes reversus. See Archimedes wortheni.

#### Archimedes sublaxus Ulrich.

1890. Archimedes sublaxus. Ulrich, Geol. Surv. Ill., vol. 8, p. 579, pl. 63, fig. 14. Chester Group: Chester, Illiuois.

#### Archimedes swallovanus Hall.

1857. Fenestella (Archimedes) Swallorana. Hall, Proc. Am. Ass. Adv. Sci., vol. 10, p. 178.

Kaskaskia Group: Kaskaskia and Chester, Illinois; Crittenden County, Kentucky.

1890. Archimedes swalloranus. Ulrich, Gool. Surv. Ill., vol. 8, p. 574, pl. 63, figs. 12-12d.

Chester Group: Chester, Illinois.

1894. Archimedes swallovanus. Keyes, Mo. Geol. Surv., vol. 5, p. 26. Kaskaskia L. S.: Ste. Genevieve, Missouri.

#### Archimedes terebriformis Ulrich.

1890. Archimedes terebriformis. Ulrich, Geol. Surv. Ill., vol. 8, p. 575, pl. 63, figs. 5-5c.

Chester Group: Chester, Illinois; Sloan's Valley, and Grayson Springs, Kentucky.

#### Archimedes wortheni Hall.

1857. Fenestella (Archimedes) Wortheni. Hall, Proc. Am. Ass. Adv. Sci., vol. 10, p. 178.

Warsaw L. S.: Warsaw, Illinois.

1858. Archimedes wortheni. Hall, Geol. Iowa, vol. 1, pt. 2, p. 651, pl. 22, figs. 3, 4a, b, 5a, b.

Warsaw L. S.: Warsaw, Illinois.

1858. Archimedes reversa. Hall, Gool. Iowa, vol. 1, pt. 2, p. 652, pl. 22, fig. 2. Warsaw L. S.: Warsaw, Illinois.

Bull. 153——7

#### Archimedes wortheni Hall-Continued.

- 1890. Archimedes wortheni. Ulrich, Geol. Surv. Ill., vol. 8, p. 571, pl. 63, figs. 8, 8a. Warsaw Beds.
- 1894. Archimedes wortheni. Keyes, Mo. Geol. Surv., vol. 5, p. 26, pl. 33, fig. 1. Keokuk L. S.: Wayland and Lagrange, Missouri.

#### Archimedes (species undetermined).

- 1842. Archimedes, cf. Lesueur. Owen, Amer. Jour. Sci. (1), vol. 43, p. 19, fig. 2. St. Louis, Missouri.
- 1876. Archimedes f —. White, Powell's Rep. Geol. Uinta Mts., p. 89. Lower Aubrey Group: Near Echo Park, Utah.
- 1879. Archimedes —— ? White, Bull. U. S. Geol. and Geog. Surv. Terr., vol. 5, p. 213.

Carboniferous: Mount Darby, Wyoming Range, Western Wyoming.

## (ARCHIMEDIPORA D'Orbigny, 1850.)

## (Archimedipora archimedes Shumard.)

1854. Archimedipora archimedes. Shumard, Marcy's Expl. Red Riv. of Louis., p. 175, pl. 1, fig. 6.

Carboniferous: Washington County, Arkansas.

(This is some species of Archimedes.)

## Archimedipora sp.

1876. Archimedipora ———(?). Meek, Simp. Expl. Gt. Basin Utah, p. 348, pl. 1, fig. 11. Camp Floyd.

## ARCHIMYLACRIS Scudder, 1868.

## Archimylacris acadicum Scudder.

- 1868. Archimylaoris Acadicus. Scudder, Dawson's Acad. Geol., p. 388, fig. 153.
  Coal Measures: East River of Pictou, Nova Scotia.
- 1868. Archimylacris Acadica. Scudder, Am. Nat., vol. 1, p. 630, pl. 16, fig. 2. Coal Measures: Nova Scotia.
- 1879. Archimylacris acadicum. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 84, pl. 6, figs. 8, 14.

Middle Coal Formation: East River, Picton, Nova Scotia.

- 1890. Archimylacris acadicum. Scudder, Foss. Insc. N. A., vol. 1, p. 104, pl. 6, figs. 8, 14.
  Middle Carboniferous: Pictou, Nova Scotia.
- 1895. Archimylacris acadica. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 59. Coal Measures: East River, Pictou, Nova Scotia.

#### Archimylacris parallelum Scudder.

1879. Archimylacris parallelum. Scudder. Mem. Bost. Soc. Nat. Hist., vol. 3, p. 85, pl. 6, fig. 6.

Lower Coal Measures: Cannelton, Pennsylvania.

1890. Archimylacris parallelum. Scudder, Foss. Insc. N. A., vol. 1, p. 105, pl. 6, fig. 6.

Lower Coal Measures: Cannelton, Pennsylvania.

1895. Archimylacris parallela. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 58. Millstone Grit: Campbell's Ledge, near Pittston, Pennsylvania.

## Archimylacris paucinervis Scudder.

1890. Archimylacris paucinereis. Seudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 411, pl. 31, fig. 5.

Carboniferous: Maron Creek, Illinois.

## Archimylacris paucinervis Scudder—Continued.

1890. Archimylacris paucinerris. Scudder, Foss. Insc. N. A., vol. 1, p. 387, pl. 23, fig. 5.

Carboniferous: Mazon Creek, Illinois.

1895. Archimylacris paucinervis. Scudder, Bull. U. S. Geol, Surv. No. 124, p. 59.

Lower Coal Measures: Mazon Creek, Illinois.

#### ARCHITARBUS Scudder, 1868.

## Architarbus elongatum Scudder.

1890. Architar us elongatum. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 449, pl. 40, fig. 4.

Carboniferous: Mazon Creek, Illinois.

1890. Architarbus elongatum. Scudder, Foss. Insc. N. A., vol. 1, p. 425, pl. 32, fig. 4. Carboniferous: Mazon Creek, Illinois.

#### Architarbus rotundatum Scudder.

1868. Architarbus rotundatus. Scudder, Geol. Surv. Ill., vol. 3, p. 568, fig. 4. Carboniferous: Mazon Creek, Grundy County, Illinois.

1890. Architarbus rotundatum. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 449. Carboniferous: Mazon Creek, Illinois.

1890. Architarbus rotundatum. Scudder, Foss. Insc. N. A., vol. 1, p. 425. Carboniferous: Mazon Creek, Illinois.

## ARCHIULUS Scudder, 1868.

# Archiulus dawsoni. See Xylobius dawsoni.

# Archiulus glomeratus Scudder.

1890. Archiulus? glomeratus. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 436, pl. 37, figs. 2, 3.

Carboniferous: Mazon Creek, Illinois.

1890. Archiulus † glomeratus. Scudder, Foss. Insc. N. A., vol. 1, p. 412, pl. 29. figs. 2, 3.

Carboniferous: Mazon Creek, Illinois.

#### Archiulus xylobioides Scudder.

1868. Archiulus xylobioides. Scudder, Dawson's Acad. Geol., p. 496.

Carboniferous: Nova Scotia.

1873. Archiulus xylobioides. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 2, p. 236. Carboniferous: Nova Scotia.

1878. Archiulus xylobioides. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 2, p. 561, figs. 5-7.

Carboniferous: Joggins, Nova Scotia.

1890. Archiulus xylobioides. Scudder, Foss. Insc. N. A., vol. 1, p. 26, 31, figs. 5-7. Carboniferous: Joggins, Nova Scotia.

#### Archiulus (species undetermined).

\*1883. Archiulus —— (2 sp.). Scudder, Trans. Phil. Soc. for 1882, p. 649. Carboniferous: Joggins, Nova Scotia.

1890. Archiulus sp. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 437, pl. 37, fig. 1. Carboniferous: Malden Mine, Kanawha Co., W. Va.

1890. Archiulus sp. Scudder, Foss. Insc. N. A., vol. 1, p. 413, pl. 29, fig. 1. Carboniferous: Malden Mine, Kanawha Co., W. Va.

#### ARTHROLYCOSA Harger, 1874.

#### Arthrolycosa antiqua Harger.

1874. Arthrolycosa antiqua. Harger, Am. Jour. Sci. (3), vol. 7, p. 219, fig. Coal Measures: Mazon Creek, Grundy County, Illinois.

# Arthrolycosa antiqua Harger—Continued.

- 1884. Arthrolycosa antiqua. Scudder, Proc. Am. Acad. Arts and Sci., vol. 20, p. 15. Carboniferous: Mazon Creek, Illinois.
- 1889. Arthrolycosa antiqua. Beecher, Am. Jour. Sci. (3), vol. 38, p. 219, figs. 1-3. Coal Measures: Illinois.

## (ASTARTE Sowerby, 1818.)

Astarte mortonensis. See Edmondia mortonensis. Astarte nebrascensis. See Edmondia nebrascensis.

#### ASTARTELLA Hall, 1858.

# Astartella concentrica McChesney.

- 1860. Edmondia concentrica. McChesney, Desc. New Pal. Foss., p. 55. Coal Measures: Carnahan's Coal Mine, Mercer County, Illinois; Big Creek, Indiana; Charbonier, Missouri.
- 1865. Edmondia concentrica. McChesney, Ill. New Spec. Foss., pl. 2, figs. 21a-b.
- 1868. Astartella concentrica. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 43, pl. 2, figs. 21a, b.
  - Coal Measures: Mercer County, Illinois; Big Creek, Indiana; Charbonier, Missouri.
- 1894. Astartella concentrica. Keyes, Mo. Geol. Surv., vol. 5, p. 126. Lower Coal Measures: Charbonier, Missouri.

## Astartella gurleyi White.

- 1878. Astartella Gurleyi. White, Proc. Acad. Nat. Sci. Phil., p. 35. Coal Measures: Danville, Illinois.
- 1880. Astartella gurleyi. White, Cont. to Inv. Pal., No. 8, p. 166, pl. 42, figs. 6a-b. Coal Measures: Danville, Illinois.

#### Astartella newberryi Meek.

- 1875. Astartella Newberryi. Meek, Pal. Ohio, vol. 2, p. 340, pl. 19, fig. 3. Coal Measures: Newark, Ohio.
- 1887. Astartella Newberryi. Herrick, Bull. Den. Univ., vol. 2, p. 39, pl. 4, fig. 33. Coal Measures: Flint Ridge, Ohio.
- 1897. Astartella newberryi. Smith, Proc. Am. Phil. Soc., vol. 35, p. 36. Upper Coal Measures: Poteau Mountain, Indian Territory. Lower Coal Measures: Conway County, Arkansas.

#### Astartella varica McChesney.

- 1860. Astartella varica. McChesney, Desc. New Pal. Foss., p. 55. Coal Measures: Springfield, Illinois.
- 1865. Astartella varica. McChesney, Ill. New Spec. Foss., pl. 2, fig. 7.
  1868. Astartella varica. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 42, pl. 2, fig. 7. Coal Measures: Springfield, Illinois.
- 1875. Astartella varica. Meek, Pal. Ohio, vol. 2, p. 341, pl. 19, fig. 2. Coal Measures: Newark, Ohio,
- 1887. Astartella varica. Herrick, Bull. Den. Univ., vol. 2, p. 39, pl. 4, fig. 31. Coal Measures: Flint Ridge, Ohio.

#### Astartella vera Hall.

- 1858. Astartella vera. Hall, Geol. Iowa, vol. 1, pt. 2, p. 715, pl. 29, figs. 1a-c. Coal Measures: Illinois and Indiana.
- 1887. Astartella rera (??). Herrick, Bull. Den. Univ., vol. 2, p. 39, Coal Measures: Flint Ridge, Ohio.

#### Astartella vera Hall—Continued.

1891. Astartella vera. Keyes, Proc. Acad. Nat. Sci. Phil., p. 250.

Lower Coal Measures: Des Moines, Iowa.

1894. Astartella vera. Keyes, Mo. Geol. Surv., vol. 5, p. 125, pl. 46, fig. 6. Lower Coal Measures: Clinton, Missouri.

1897. Astartella vera. Smith, Proc. Am. Phil. Soc., vol. 35, p. 36.
Upper Coal Measures: Poteau Mountain, Indian Territory.

## Astartella (species undetermined).

1875. Astartella (undetermined sp.) Meek, Pal. Ohio, vol. 2, p. 341, pl. 19, figs. 1a-b. Coal Measures: Newark, Ohio.

## (ASTEROCRINUS Lyon, 1857).

Asterocrinus capitalis. See Pterotocrinus capitalis.

Asterocrinus coronarius. See Pterotocrinus coronarius.

# ASYMPTOCERAS Ryckholt, 1852.

## Asymptoceras capax Meek and Worthen.

1865. Nautilus (Cryptoceras) capax. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 262.

Coal Measures: Charboniere, Missouri.

1875. Nautilus (Cryptoceras) capax. Meek and Worthen, Geol. Surv. Ill., vol. 6, p. 532, pl. 33, fig. 1.

Coal Measures: Charboniere, Missouri.

1891. Asymptocerae capax. Hyatt, 2d Ann. Rep. Geol. Surv. Tex., p. 346.

#### Asymptoceras newloni Hvatt.

1891. Asymptoceras Newloni. Hyatt, 2d Ann. Rep. Geol. Surv. Tex., p. 346, figs. 48, 49.

Coal Measures: Oswego, Kansas.

1893. Asymptoceras Newloni. Hay, Trans. Kans. Acad. Sci., vol. 13, p. 45. Coal Measures: Oswego, Kansas.

#### Asymptoceras springeri White and St. John.

1868. Nautilus (Cryptoceras) Springeri. White and St. John, Trans. Chicago Acad. Sci., vol. 1, p. 124, fig. 10.

Upper Coal Measures: Adair County, Iowa.

1891. Asymptoceras Springeri. Hyatt, 2d Ann. Rep. Geol. Surv. Tex., p. 346.

# ATELESTOCRINUS Wachsmuth and Springer, 1886.

#### Atelestocrinus delicatus Wachsmuth and Springer.

1886. Attelesocrinus delicatus. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil, p. 147; Rev. Palæocr. pt. 3, p. 223.

Lower Burlington L. S.: Burlington, Iowa.

## Atelestocrinus robustus Wachsmuth and Springer.

1886. Atelestocrinus robustus. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil., p. 147; Rev. Palæocr., pt. 3, p. 223.

Burlington and Keokuk Transition bed: Near Burlington, Iowa.

Base of Keokuk L. S.: White's Creek Spring, near Nashville, Tennessee.

#### ATHYRIS McCoy, 1844.

Athyris americana. See Cleiothyris roissyi.

Athyris argentea. See Seminula subtilita.

Athyris ashlandensis. : See Athyris lamellosa.

Athyris biloba Windhell.

1865. Spirigera bilada: Winchell, Proc. Acad. Nat. Sci. Phil., p. 118. Goniatite I. S.: Rockford, Indiana.

Athyris corpuleirta Winchell.

1863. Spirigera corpulenta. Winchell, Proc. Acad. Nat. Sci. Phil., p. 6. Yellow, S. S.: Burlington, Iowa.

Athyris crassicardinalis. See Cleiothyris crassicardinalis.

## Athyris densa Hall.

1894, 1thyris densa. Hall, 13th Rep. N. Y. State Geol., p. 651.

St. Louis Group: Washington County, Indiana; Colesburg, Kentucky.

. 1895. Athyris densa. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, p. 364, pl. 46, figs. 6-12.

St. Louis Group: Washington County, Indiana; Colesburg, Kentucky; Lanesville, Indiana.

1897. Athyris densa. Hall, 14th Rep. N. Y. State Geol., p. 358, pl. 9, figs. 3-9.
St. Louis Group: Washington County, Indiana; Colesburg, Kentucky.

Athyris differentius. See Seminula subtilita.

Athyris formosa. See Seminula formosa.

#### Athyris hannibalensis Swallow.

1860. Spirigera Hannibalensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 649.
Chemung Rocks: Hannibal, Louisiana, and Sulphur Springs, Missouri.

1865. Spirigera Hannibalensis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 118. Lithographic L. S.: Clarksville, Missouri.

1870. Spirigera Hannibalensie. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 253. Waverly Group: Sciotoville, Ohio.

1894. Athyris hannibalensis. Keyes, Mo. Geol. Surv., vol. 5, p. 91, pl. 41, fig. 9. Louisiana L. S.: Hannibal, Louisiana, and Sulphur Springs, Missouri.

1895. Athyris Hannibalensis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 46, figs. 13-15.
Choteau L. S.: Louisiana, Missouri.

Onotour 11. C.: Douterun, missour.

Athyris hirsuta. See Cleiothyris hirsuta.

## Athyris incrassata Hall.

1858. Athyris incrassatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 600, pl. 12, fig. 6.
Burlington L. S.: Burlington, Iowa; Quincy, Illinois; Hannibal, Missouri.

1895. Athyris incrassata. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 46, fig. 21; pl. 83, fig. 39.

Burlington L. S.: Burlington, Iowa.

Warsaw L. S.: Des Moines River, Iowa.

See Athyris lamellosa.

#### Athyris intervarica McChesney.

1861. Athyris intervarica. McChesney, Desc. New Spec. Foss., p. 78. Burlington L. S.: Burlington, Iowa.

# Athyris jacksoni Swallow.

1860. Spirigera Jacksoni. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 651. Upper Coal Measures: Cass County, Missouri.

## Athyris lamellosa Leveille.

1875. Athyris lamellosa? Meek, Pal. Ohio, vol. 2, p. 283, pl. 14, figs. 6a, b. Waverly Group: Sciotoville, Ohio.

1888. Athyris lamellosa. Herrick, Bull. Den. Univ., vol. 3, p. 49, pl. 2, fig. 7. Waverly Group: Licking County, Ohio.

## Athyris lamellosa Leveille—Continued.

1888. Athyris ashlandensis. Herrick, Bull. Den. Univ., vol. 4, p. 24, pl. 3, fig. 6. Waverly Group: Ashland County and Moots Run, Licking County, Ohio.

1894. Athyris incrassatus. Keyes, Mo. Geol. Surv., vol. 5, p. 91, pl. 41, fig. 10. Burlington L. S.: Hannibal, Missouri.

1895. Athyris ashlandensis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 23, fig. 10. Cuyahoga Shale: Ashland and Licking counties. Ohio.

1895. Athyris lamellosa. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 46, figs. 16-20.

Waverly Group: Sciotoville, Ohio.

Keokuk Group: Crawfordsville, Indiana.

## Athyris missouriensis Winchell.

1865. Spirigera Missouriensis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 117. Lithographic L. S.: Louisiana, Missouri.

Marshall Group: Weymouth, Medina County, Ohio, 60 feet below conglomerate.

## Athyris monticola White.

1874. Spirigera monticola. White, Prelim. Rep. Inv. Foss., p. 16.
Subcarboniferous: Mountain Spring, Old Mormon Road, Nevada.

1877. Spirigera monticola. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 91, pl. 5, figs. 11a-d.

Subcarboniferous: Mountain Spring, Old Mormon Road, Nevada.

# Athyris obmaxima. See Cleiothyris obmaxima.

Athyris obvia. See Cleiothyris obvia.

## Athyris ohioensis Winchell.

1865. Spirigera Ohiensis. Winchell, Proc. Acaa. Nat. Sci. Phil., p. 118.
Marshall Group: Akron, Ohio.

1870. Spirigera Ohiensis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 253. Waverly Group: Sciotoville, Ohio.

1888. Athyris obiocusis. Herrick, Bull. Den. Univ., vol. 3, p. 49, pl. 2, figs. 1-3. Waverly Group: Licking County, Ohio.

Athyris orbicularis. See Cleiothyris orbicularis.

#### Athyris papilioniformis McChesney.

1860. Athyris spiriferoides. McChesney, Desc. New Pal. Foss., p. 46. (Not A. spiriferoides Eaton.)

Kaskaskia L. S.: Fountain Bluff, Illinois.

1865. Athyris papilioniformis. McChesney, Ill. New Spec. Foss., pl. 6, fig. 4a-c.

1868. Athyris? papilioniformis. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 33, pl. 6, figs. 4a-c.

Chester L. S.: Fountain Bluff, Illinois.

# Athyris parvirostra. See Cleiothyris roissyi.

#### Athyris perinflata McChesney.

1861. Athyris perinflata. McChesney, Desc. New Spec. Foss., p. 81 Keokuk Group: Nam'oo, Illinois.

Athyris persinuata. See Seminula persinuata.

Athyris planosulcata. See Cleiothyris roissyi.

#### Athyris prouti Swallow.

1860. Spirigera Proutii. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 649. Chemung Rocks: St. Louis County, near Sulphur Springs, Missouri.

1894. Athyris proutii. Keyes, Mo. Geol. Surv., vol. 5, p. 91.

Louisiana L. S.: Hannibal, Louisiana; Clarksville, and Sulphur Springs,

Missouri.

Athyris roissyi. See Cleiothyris roissyi.

Athyris spiriferoides. See Athyris papilioniformis.

Athyris squamosa. See Cleiothyris squamosa.

Athyris sublamellosa. See Cleiothyris roissyi.

Athyris subquadrata. See Seminula subquadrata.

Athyris subtilita. See Seminula subtilita and Seminula dawsoni.

Athyris trinuclea. See Seminula trinuclea.

Athyris ultravarica McChesney.

1861. Athyris ultravarica. McChesney, Desc. New Spec. Foss., p. 79. Keokuk Group: Keokuk, Iowa; Ste. Genevieve, Missouri.

## Athyris (species undetermined).

1859. Spirigera — ? Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 28. Upper Coal Measures: Fort Riley, Kansas.

1888. Athyris sp. Herrick, Bull. Den. Univ., vol. 3, pl. 7, figs. 19, 34; pl. 12, fig. 28. Waverly Group: Licking County, Ohio.

1888. Athyris sp. Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 23. Waverly Group: Cuyahoga Falls, Ohio.

## ATRYPA Dalman, 1827.

## Atrypa reticularis Linnæus.

1888. Atrypa reticularis!! Herrick, Bull. Den. Univ., vol. 3, p. 41, pl. 3, fig. 11.
Waverly Group: Licking County, Ohio.

1888. Atrypa reticularis. Herrick, Bull. Den. Univ., vol. 4, pl. 9, fig. 7.
Shales above Berea Grit: Central College, Ohio.

1889. Atrypa reticularis. Herrick, Am. Geol., vol. 3, pl. 4, fig. 7.

1885. Atrupa reticularia. Herrick, Geol. Surv. Ohio, vol. 7, pl. 20, fig. 7. Shale above Berea Grit: Ohio.

## (AUCELLA Keyserling, 1846.)

Aucella hausmani. See Myalina swallovi.

#### AULACORHYNCHUS Dittmar, 1871.

#### Aulacorhynchus millepunctatus Meek and Worthen.

1870. Chonetes ## millepunctatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 35.

Upper Coal Measures: Marion County, Illinois.

1873. Chonetee?? millepunctata. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 566, pl. 25, fig. 3.

Upper Coal Measures: Marion County, Illinois.

1873. Inogramma millepunctata. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 568.

1886. Chonetes (?) millepunctata. Heilprin, 2d Geol. Surv. Pann., Ann. Rep. for 1885, p. 452, p. 440, fig. 3.

Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.

1886. Chonetes (\*) millepunctata. Herlprin, Proc. and Coll. Wyo. Hist. and Gool. Soc., vol. 2, pt. 2, p. 288, fig. 3.

Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.

1894. Aulacorhynchus miliepunctains. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 54, figs. 28, 24.

Coal Measures: Crooked Creek, Illinois.

# Aulacorhynchus millepunctatus Meek and Worthen-Continued.

1894. Chonetes millepunctatus. Keyes, Mo. Geol. Surv., vol. 5, p. 54.

Upper Coal Measures: Kansas City, Missouri.

1895. Aulacorhynchus millepunctatus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 83, figs. 14, 15.

Coal Measures: Crooked Creek, Illinois.

## AULOPORA Goldfuss, 1826.

## Aulopora gracilis Keyes.

1894. Aulopora gracilis. Keyes, Mo. Geol. Surv., vol. 4, p. 123, pl. 14, fig. 8.

Burlington L. S.: Hannibal, Missouri; Burlington, Iowa.

Keokuk L. S: Boonville, Missonri; Keokuk, Iowa.

## (AULOSTEGES Helmerson, 1847.)

Aulosteges guadalupensis. See Strophalosia guadalupensis.

Aulosteges spondyliformis. See Strophalosia spondyliformis.

#### AVICULA Klein, 1753.

Avicula acanthoptera. See Pterinea spinalata.

#### Avicula acosta Cox.

1857. Avicula acosta. Cox, Geól. Rep. Ky., vol. 3, p. 572, pl. 9, fig. 3.
Coal Measures: Union County, Kentucky; Gallatin County, Illinois.

Aricula circulus. See Pernopecten circulus.

Avicula cooperensis. See Pernopecten cooperensis.

#### Avicula custa Hall.

1852. Avioula? custa. Hall, Stansb. Exped. Gt. Salt Lake, p. 412, pl. 2, figs. 1a, b. Carboniferous: Between Fort Laramie and Great Salt Lake, Utah.

#### Avicula gryphæata Münster.

1858. Avicula gryphæata (?). Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 189. Upper Permian: Kansas.

#### Avicula longa Geinitz.

1866. Gervillia longa. Geinitz, Carb. und Dyas in Nebr., p. 32, tab. 2, fig. 15. Nebraska City.

1872. Avicula longa. Meek, U. S. Geol. Surv. Nebr., p. 199, pl. 9, fig. 8.
Upper Coal Measures: Nebraska City and Riverside, Nebraska.
Coal Measures: Atchison, Kansas; Illinois.

1873. Avicula longa. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 578, pl. 26, fig. 1.

Coal Measures: Danville, Illinois.

1891. Avicula longa. Keyes, Proc. Acad. Nat. Sci. Phil., p. 248. Middle Coal Measures: Des Moines, Iowa.

1891. Gervillia longa. White, Bull. U. S. Geol. Surv., No. 77, p. 29, pl. 4, fig. 2. Permian: Goodwin Creek, Baylor County, Texas.

1894. Avicula longa. Keyes, Mo. Geol. Surv., vol. 5, p. 113. Upper Coal Measures: Kansas City, Missouri.

Avicula magna. See Aviculopecten magna.

# Avicula morganensis Meek and Worthen.

1866. Pteria (Pterinea?) morganensis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 259.

Coal Measures: Morgan County, Illinois.

#### Avicula morganensis Meek and Worthen—Continued.

1873. Avicula Morganensis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 576, pl 26, fig. 14.

Coal Measures: Morgan County, Illinois.

Avicula oblonga. See Aviculopecten oblongus.

#### Avicula ohioense Herrick.

1887. Gervillia (?) ohioense. Herrick, Bull. Den. Univ., vol. 2, p. 36, pl. 4, fig. 13; pl. 3, fig. 12

Coal Measures: Flint Ridge, Ohio.

1887. Avicula (Gerrillia) ohioense. Herrick, Bull. Den. Univ., vol. 2, p. 145, pl. 14, fig. 22.

Coal Measures: Flint Ridge, Ohio.

#### Avicula orbiculus Stevens.

1858. Aricula orbiculus. Stevens, Am. Jour. Sci. (2), vol. 25, p. 264.
Coal Measures: Summit, Ohio, and Springfield, Illinois.

Avicula pinnæformis. See Aviculopinna americana.

#### Avicula recta Herrick.

1888. Avicula † recta. Herrick, Bull. Den. Univ., vol. 4, p. 115, pl. 10, fig. 13. Cuyahoga Shale: Cuyahoga Falls, Ohio.

1895. Avicula recta. Herrick, Geol. Surv. Ohio, vol. 7, pl. 23, fig. 5. Cuyahoga Shale: Cuyahoga Falls, Ohio.

Avicula rectalaterarea. See Aviculopecten rectalaterarius.

Avicula scutella. See Leptodesma scutella.

# Avicula semielliptica Sbumard.

1858. Avicula semielliptica. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 210. Upper Coal Measures: Valley of the Verdigris River, Kansas.

#### Avicula shawneensis Shumard.

1858. Aricula Shawneensis. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 211. Upper Coal Measures: Clifton Park, Kansas.

Avicula speluncaria. See Pseudomonatis radialis.

#### Avicula subspatulata Herrick.

1888. Leiopteria ep. Herrick, Bull. Den. Univ., vol. 3, p. 62, pl. 3, fig. 6. Waverly Group: Licking County, Ohio.

1888. Avicula? sub-spatulata. Herrick, Bull. Den. Univ., vol. 4, p. 30, pl. 5, fig. 11.

Waverly Group: Newark, Ohio.

1889. Avicula? subspatulata. Herrick, Am. Geol., vol. 3, pl. 3, fig. 11.

1895. Avicula subspatulata. Herrick, Geol. Surv. Ohio, vol. 7, pl. 24, fig. 2. Burlington: Newark, Ohio.

#### Avicula sulcata Geinitz.

1866. Gervillia (an Avicula) sulcata. Geinitz, Carb. und Dyas in Nebr., p. 33, tab. 2, fig. 16.
Nebraska City.

1872. Avicula? sulcata. Meek, U. S. Geol. Surv. Nebr., p. 200, pl. 9, fig. 9. Upper Coal Measures: Nebraska City, Nebraska.

#### Avicula triplistriata Stevens.

1858. Aricula triplistriata. Stevens, Am. Jour. Sci. (2), vol. 25, p. 265.
Coal Measures: Summit, Ohio.

#### Avicula whitei Winchell.

1863. Aricula Whitei. Winchell, Proc. Acad. Nat. Sci. Phil., p. 8. Yellow S. S.: Burlington, Iowa.

## Avicula (species undetermined).

1852. Aricula (sp. undetermined). Owen, Geol. Rep. Wis., Iowa, and Minn., tab. 3A, fig. 3.

Carboniferous L. S. (oolite): 3 miles below Augusta, Iowa.

## AVICULOPECTEN McCoy, 1851.

## Aviculopecten acadicus Hartt.

1868. Aviculopecton Acadicus. Hartt, Dawson's Acad. Geol., p. 307, fig. 114. Carboniferous L. S.: Windsor, Nova Scotia.

## Aviculopecten acutialatus Swallow.

1858. Pecton acutialatus. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 185. Permian: Valley of Kansas River, Kansas.

#### Aviculopecten affinis Walcott.

1884. Ariculopecten affinis. Walcott, Pal. Eureka Dist., p. 229, pl. 19, figs. 1, 1a. Lower Carboniferous: Eureka District, Nevada.

## Aviculopecten amplus Meek and Worthen.

1860. Aviculopecten amplus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 454. Keokuk L. S.: Monroe County, Illinois.

1866. Avioulopecten amplus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 257, pl. 18, figs. 4a-o.

Keokuk Group: Monroe County, Illinois.

#### Aviculopecten armigerus Conrad.

1835. Pecten armigerus. Conrad, Trans. Geol. Soc. Penn., vol. 1, pt. 2, p. 268, pl. 12, fig. 3.

#### Aviculopecten batesvillensis Weller.

1897. Aviculopecten batesvillensis. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 263, pl. 19, figs. 3, 4.

Batesville S. S.: Batesville, Arkansas.

#### Aviculopecten burlingtonensis Meek and Worthen.

1860. Aviculopecton Burlingtonensis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 453.

Burlington L. S.: Burlington, Iowa.

1866. Aviculopecten burlingtonensis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 231, pl. 16, figs 1a, b.

Burlington L. S.: Burlington, Iowa.

#### Aviculopecten cancellatus. See Crenipecten cancellatus.

#### Aviculopecten carboniferus Stevens.

1858. Pecten carboniferus. Stevens, Am. Jour. Sci. (2), vol. 25, p. 261.
Coal Measures: Crooked Creek, Marion County, Illinois.

1863. Peoten Broadheadii. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 97. Upper Coal Measures: Harrison County, Missouri.

1866. Peoten Hawni. Geinitz, Carb. und Dyas in Nebr., p. 36, tab. 2, figs. 19a, b. Nebraska City, Nebraska.

1872. Aviculopecten carboniferus. Meek, U. S. Geol. Surv. Nebr., p. 193, pl. 4, fig. 8; pl. 9, figs. 4a, b.

Upper Coal Measures: Nebraska City, Nebraska.

Coal Measures: lowa, Illinois, West Virginia.

1874. Aviculopecten carboniferus. Meek, Am. Jour. Sci. (3), vol. 7, p. 489.

1884. Avioulopecton carboniferus. White, 13th Rep. Geol. Surv. Ind., p. 144, pl. 28, figs. 5-6.

Coal Measures: Lick Branch, near Silverwood, Fountain County, and in Vermilion County, Indiana.

## Aviculopecten carboniferus Stevens-Continued.

1887. Aviculopecten carboniferus. Herrick. Bull. Den. Univ., vol. 2, p. 67, pl. 3.

Coal Measures: Flint Ridge, Ohio.

1894. Ariculopecten carboniferus. Keyes, Mo. Geol. Surv., vol. 5, p. 111, pl. 43, figs. 4a, b.

Upper Coal Measures: Kansas City, Missouri.

1897. Ariculopecten carboniferus. Smith, Proc. Am. Phil. Soc., vol. 35, p. 33. Lower Coal Measures: White and Conway counties, Arkansas.

## Aviculopecten caroli Winchell.

1863. Aviculopecten Caroli. Winchell, Proc. Acad. Nat. Sci. Phil., p. 9. Yellow S. S. and base of Burlington L. S.: Burlington, Iowa.

1865. Ariculopecten Caroli. Winchell, Proc. Acad. Nat. Sci. Phil., p. 125. Base of Burlington L. S.: Burlington, Iowa.

1870. Aviculopecten Caroli. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 255. Waverly Group: Newark, Sciotoville, and Granville, Ohio.

1884. Aviculopecten Caroli. Hall, Pal. N. Y., vol. 5, pt. 1, Lam. I, p. 29, pl. 9, fig. 5.

Waverly S. S.: Newark, Ohio.

1888. Crenipecten caroli. Herrick, Bull. Den. Univ., vol. 4, pl. 5, fig. 9. Waverly Group: Gann, Ohio.

1889. Crenipecten caroli. Herrick, Am. Geol., vol. 3, pl. 3, fig. 9.
1895. Crenipecten caroli. Herrick, Geol. Surv. Ohio, vol. 7, pl. 24, fig. 4. Kinderhook: Gann, Ohio.

## Aviculopecten catactus Meek.

1877. Aviculopecten catactus. Meek, U. S. Geol. Expl., 40 Par., vol. 4, p. 93, pl. 3, figs. 10, 10a.

Devonian or Carboniferous: Hamilton, White Pine Mountains, Nevada.

#### Aviculopecten chesterensis Worthen.

1884. Aviculopecten chesterensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 20.

Lower Chester L. S.: Chester, Illinois.

1890. Aviculopecten chesterensis. Worthen, Geol. Surv. Ill., vol. 8, p. 115, pl. 21, figs. 5, 5a.

Chester L. S.: Chester, Illinois.

## Aviculopecten colletti Worthen.

1884. Ariculopecten colletti. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 21. Keokuk Shale: Crawfordsville, Indiana.

1890. Ariculopecten colletti. Worthen, Geol. Surv. Ill., vol. 8, p. 119, pl. 22, figs. 8b. 13.

Keokuk Group: Crawfordsville, Indiana.

#### Aviculopecten coloradoensis Newberry.

1861. Pecten (Monotist) Coloradensis. Newberry, Ives' Colo. Expl. Exped., p. 129, pl. 1, figs. 6, 6a.

Upper Carboniferous : Region of Colorado River?

#### Aviculopecten cooperi Herrick.

1888. Ariculopecten cooperi. Herrick, Bull. Den. Univ., vol. 3, p. 51, pl. 12, figs.

Waverly Group: Licking County, Ohio.

1895. Crenipecten (Aviculopecten f) cooperi. Herrick, Geol. Surv. Ohio, vol. 7, pl. 23, figs. 1-4.

(Cuyahoga Shale): Cuyahoga Falls, Ohio.

#### Aviculopecten cora Dawson.

1868. Ariculopecten cora. Dawson, Acad. Geol., p. 307, fig. 115. Carboniferous L. S.: Shubenacadie, Nova Scotia.

#### Aviculopecten coreyanus White.

1874. Aviculopecten Coreyana. White, Prelim. Rep. Inv. Foss., p. 21. Carboniferous (Coal Measures): East of Mount Taylor, 1 mile south of Pajnata, New Mexico.

1877. Avioulopecten Coreyanus. White, U. S. Geog. Strv. W. 100 Merid., vol. 4, p. 147, pl. 11. figs. 1a, b. Carboniferous: Bear Spring, near Camp Wingate, New Mexico.

1894. Aviculopecten coryanus. Keyes, Mo. Geol. Surv., vol. 5, p. 113. Upper Coal Measures: Kansas City, Missouri.

## Aviculopecten coxanus Meek and Worthen.

1860. Aviculopecten Coxanus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p.

Coal Measures: Adams County, Illinois.

1866. Aviculopecten Coxanus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 326, pl. 26, figs. 6a, b.

Lower Coal Measures: Adams County, Illinois.

1872. Aviculopecton Coxanus. Meek, U. S. Geol. Surv. Nebr., p. 196, pl. 9, figs.

Upper Coal Measures: Nebraska City, Nebraska; Illinois.

Lower Coal Measures: Adams County, Illinois.

1886. Aviculopecten coxanus. Claypole, Proc. and Coll., Wyo. Hist. and Gool. Soc., vol. 2, pt. 2, p. 247.

Lower Coal Measures: Wilkesbarre, Pennsylvania.

1887. Aviculopecten coxanus. Herrick, Bull. Den. Univ., vol. 2, p. 26, pl. 1, figs, 4, 17.

Coal Measures: Flint Ridge, Ohio.

1888. Aviculopecten cozanus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 232. Lower Coal Measures: Des Moines, Iowa.

1894. Aviculopecton coxanus. Keyes, Mo. Geol. Surv., vol. 5, p. 112. Upper Coal Measures: Kansas City, Missouri.

1897. Aviculopecten coxanus. Smith, Proc. Am. Phil. Soc., vol. 35, p. 33. Upper Coal Measures: Poteau Mountain, Indian Territory.

#### Aviculopecten crenistriatus Meek.

1871. Aviculopecten crenistriatus. Meek, Proc. Acad. Nat. Sci. Phil., p. 60. Upper Wayerly Group: Sciotoville, Ohio.

1875. Aviculopecton orenistriatus. Meek, Pal. Ohio, vol. 2, p. 295, pl. 15, figs.

Upper Waverly Group: Sciotoville, Ohio.

1888. Crenipecten crenistriatus. Herrick, Bull. Den. Univ., vol. 4, p. 34, pl. 5,

Waverly Group: Newark, Ohio.

1889. Crenipecten orenistriatus. Herrick, Am. Geol., vol. 3, pl. 3, fig. 14.
1895. Crenipecten crenistriatus. Herrick, Geol. Surv., Ohio, vol. 7, pl. 24, fig. 3. Burlington: Newark, Ohio.

## Aviculopecten curtocardinalis Hall and Whitfield.

1877. Aviculopecten curto-oardinalis. Hall and Whitfield, U. S. Geol. Expl., 40 Par., vol. 4, p. 273, pl. 6, fig. 4.

Upper Coal Measures: Foothills southeast of Salt Lake City, Wahsatch Range, Utah.

#### Aviculopecten debertianus Dawson.

1868. Aviculopecten Debertianus. Dawson, Acad. Geol., p. 307, fig. 116. Carboniferous L. S.: De Bert River, Nova Scotia.

## Aviculopecten edwardsi Worthen.

1884. Avioulopecten edwardsi. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist.,

Upper Keckuk L. S.: Warsaw, Illinois.

1890. Aviculopecton edwardsi. Worthen, Geol. Surv. Ill., vol. 8, p. 119, pl. 22, fig. 2.

Keokuk L. S.: Warsaw, Illinois.

#### Aviculopecten elsahensis Worthen.

1884. Aviculopecton elsahensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist.,

Kinderhook Group ?: one-half mile above Elsah, Jersey County, Illinois.

1890. Aviculopecton elsahensis. Worthen, Geol. Surv. Ill., vol. 8, p. 115, pl. 22,

Kinderhook ! Group: one-half mile above Elsah, Jersey County, Illinois.

#### Aviculopecten eurekensis Walcott.

1884. Aviculopecten Eurekensis. Walcott, Pal. Eureka Dist., p. 227, pl. 19, figs. 2, 3.

Lower Carboniferous: Eureka District, Nevada.

#### Aviculopecten fasciculatus Keyes.

1894. Aviculopecten fasciculatus. Keyes, Mo. Geol. Surv., vol. 5, p. 113, pl. 42, fig. 7. (Not A. fasciculatus Hall, 1883.) Upper Coal Measures: Kansas City, Missouri.

#### Aviculopecten germanus Miller and Faber.

1892. Aviculopecten germanus. Miller and Faber, Jour. Cinn. Soc. Nat. Hist., vol. 15, p. 81, pl. 1, fig. 9.

Coal Measures: Elkhorn Creek, Kentucky.

1897. Aviculopecten germanus. Smith, Proc. Am. Phil. Soc., vol. 35, p. 33. Upper Coal Measures: Poteau Mountain, Indian Territory.

#### Aviculopecten gradocostus White.

1862. Aviculopecten gradocostus. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 31. Chemung S. S.: Burlington, Iowa.

#### Aviculopecten granvillensis Herrick.

1888. Aviculopecten granvillensis. Herrick, Bull. Den. Univ., vol. 3, p. 50, pl. 10, fig. 8.

Waverly Group: Licking County, Ohio.

1888. Crenipecten granvillensis. Herrick, Bull. Den. Univ., vol. 3, pl. 12, fig. 22. Waverly Group: Licking County, Ohio.

# Aviculopecten haguei Walcott.

1884. Aviculopecten Haguei. Walcott, Pal. Eureka Dist., p. 226, pl. 19, fig. 4. Lower Carboniferous: Eureka District, Nevada.

#### Aviculopecten halli Swallow.

1860. Peoten Halli. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 656. Coal Measures: Willow Springs, Kansas.

#### Aviculopecten hardinensis Worthen.

1890. Aviculopecten hardinensis. Worthen, Geol. Surv. Ill., vol. 8, p. 117, pl. 22, figs. 5, 5a.

St. Louis L. S.: Hardin County, Illinois.

## Aviculopecten hertzeri Meek.

1871. Ariculopecten (Streblupteria?) hertzeri. Meek, Proc. Acad. Nat, Sci. Phil., p. 61.

Lower Coal Measures: Newark, Ohio.

1875. Aviculopecten (Streblopteria ?) Hertzeri. Meek, Pal. Ohio, vol. 2, p. 330, pl. 19, figs. 13a-c.

Lower Coal Measures: Newark, Ohio.

1887. Aviculopecton hertzeri. Herrick, Bull. Den. Univ., vol. 2, p. 25, pl. 1, figs.

Coal Measures: Flint Ridge, Ohio.

#### Aviculopecten indianensis Meek and Worthen.

1868. Ariculopesten Indianensis. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 532, pl. 19, figs. 6a, b.

Keokuk Group: Crawfordsville, Indiana.

#### Aviculopecten interlineatus Meek and Worthen.

1860. Aviculopecten interlineatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil.,

Upper Coal Measures: Lasalle, Illinois.

1866. Aviculopecten interlineatus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 329, pl. 26, figs. 7a, b. Upper Coal Measures: Lasalle, Illinois.

1877. Aviculopecten? interlineatus. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 149, pl. 11, fig. 3a.

Carboniferous: Confluence of White Mountain and Black rivers, Arizona. 1884. Aviculopecten (f) interlineatus. White, 13th Rept. Geol. Surv. Ind., p. 145,

pl. 30, fig. 9. Coal Measures: Indiana (?).

1891. Ariculopecten interlineatus. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 604, pl. 16, figs. 10, 11.

Coal Measures: Hocking County, Ohio. 1894. Aviculopector ? interlineatus. Keyes, Mo. Geol. Surv., vol. 5, p. 112, pl. 42,

Upper Coal Measures: Kansas City, Missouri.

1895. Aviculopecten interlineatus. Whitfield, Geol. Surv. Ohio, vol. 7, p. 489, pl. 12, figs. 10, 11.

Coal Measures: Falls township, Hocking County, Ohio.

#### Aviculopecten iowensis Miller.

1863. Aviculopecten occidentalis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 9. (Not A. occidentalis Shumard, 1855.)

Oolitic L. S.: Burlington, Iowa.

1865. Aviculopecten occidentalis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 126.
1870. Aviculopecten occidentalis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 255. Waverly Group: Newark, Ohio.

1883. Ariculopecten iowensis. Miller, Am. Pal. Foss., 2d ed., p. 310.

#### Aviculopecten konincki Meek and Worthen.

1860. Aviculopecten Koninckii. Meek and Worthen, Proc. Acad. Nat. Sci. Phil.,

Lower Coal Measures: Alpine, Iowa.

1866. Ariculopecten Koninckii. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 328, pl. 26, fig. 8.

Lower Coal Measures: Alpine, Iowa.

Aviculopecten limaformis. See Pernopecten limaformis.

#### Aviculopecten lyelli Dawson.

1868. Aviculopecten Lyclli. Dawson, Acad. Geol., p. 305, figs. 111a-c. Carboniferous L. S.: Windsor, Shubenacadie, etc., Nova Scotia.

#### Aviculopecten lyelli var. alternans Dawson.

1883. Aviculopecten Lyelli (var. alternans). Dawson, Rep. Peter Redpath Mus., No 2, p. 12.

Lower Carboniferous: Brookfield and Shubenacadie, Nova Scotia.

#### Aviculopecten macwhorteri Worthen.

1890. Ariculopecten mac-whorteri. Worthen, Geol. Surv. Ill., vol. 8, p. 118, pl. 22, fig. 4.

Kinderhook Group: Kinderhook, Illinois.

#### Aviculopecten magnus Swallow.

1863. Aricula magna. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 98. Archimedes L. S.: Knox County, Missouri.

1894. Aviculopecten magnus. Keyes, Mo. Geol. Surv., vol. 5, p. 110, pl. 43, tig. 7. Burlington L. S.: Springfield, Missouri.

## Aviculopecten mazonensis Worthen.

1890. Aviculopecten mazonensis. Worthen, Geol. Surv. Ill., vol. 8, p. 117, pl. 22, fig. 9.

Coal Measures: Mazon Creek, Grundy County, Illinois.

## Aviculopecten mccoyi Meek and Hayden.

1864. Aviculopecten McCoyi. Meek and Hayden, Pal. Upper Mo., p. 50, pl. 2, fig. 9. Permian: South Cottonwood Creek, Kansas.

1877. Aviculopecten McCoyi. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 149, pl. 11, fig. 2a.

Carboniferous: Near Bear Spring, Camp Wingate, New Mexico.

#### Aviculopecten menardi Worthen.

1884. Limat menardi. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 22.

Coal Measures: Menard County, Illinois.

1890. Aviculopecten menardi. Worthen, Geol. Surv. Ill., vol. 8, p. 120, pl. 22, fig. 12. Coal Measures: Menard County, Illinois.

#### Aviculopecten missouriensis Shumard.

1855. Pecten Missouriensis. Shumard, Geol. Rep. Mo., p. 207, pl. C, fig. 16. St. Louis L. S.: St. Louis County, Missouri.

1886. Pecten missouriensis. Claypole, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 247.

Lower Coal Measures: Wilkesbarre, Pennsylvania.

1894. Ariculopecten missouriensis. Keyes, Mo. Geol. Surv., vol. 5, p. 110. St. Louis L. S.: St. Louis, Missouri.

#### Aviculopecten monroensis Worthen.

1884. Ariculopeolen monroensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 21.

St. Louis L. S. (oolitic beds): Monroe County, Illinois.

1890. Ariculopecten monroensis. Worthen, Geol. Surv. Ill., vol. 8, p. 114, pl. 22, figs. 8, 8a.

St. Louis L. S. (oolite): Monroe County, Illinois.

#### A viculopecten neglectus. See Euchondria neglecta.

## Aviculopecten newarkensis Winchell.

1870. Aniculopecten Newarkensis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 255. Waverly Group: Newark, Ohio.

1888. Aviculopecten (Crenipecten) newarkensis! Herrick, Bull. Den. Univ., vol. 3, p. 52, pl. 3, fig. 31.

Waverly Group: Licking County, Ohio.

## Aviculopecten niotensis Worthen.

1884. Aviculopecten niotense. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 19.

Keokuk L. S.: Niota, Hancock County, Illinois.

1890. Aviculopecton niotenesis. Worthen, Geol. Surv. Ill., vol. 8, p. 113, pl. 22, fig. 10. Keokuk L. S.: Niota, Hancock County, Illinois.

## Aviculopecten nodocostatus White and Whitfield.

1862. Avioulo-pecten nodocostatus. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 296. Chemung Group: Burlington, Iowa.

## Aviculopecten oblongus Meek and Worthen.

1860. Avicula oblonga. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 451. Warsaw L. S.: Warsaw, Illinois.

1866. Aviculopecten oblongus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 258, pl. 18, figs. 3a, b.
Keokuk Group: Warsaw, Illinois.

#### Aviculopecten occidancus Meek.

1877. Aviculopecten occidancus. Meek, U. S. Geol. Expl., 40 Par., vol. 4, p. 96, pl. 12, figs. 13-13b.
 Upper Coal Measure L. S.: Weber Cañon, Wasatch Range, Nevada.

## Aviculopecten occidentalis Shumard.

1855. Pecten occidentalis. Shumard, Geol. Rep. Mo., p. 207, pl. C, fig. 18. Coal Measures: Near Plattsburg, Clinton County, Missouri.

1858. Pecten Cleavelandious. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 184.
Permian: Valley of South Cottonwood, Kansas.

1861. Pecten occidentalis. Newberry, Ives' Colo. Expl. Exped., p. 128.
Coal Measures: Banks of the Stranger, above Easton, Kansas.

1864. Aviculopecten —— ¶ Meek and Hayden, Pal. Upper Mo., p. 50, pl. 2, fig. 10.
Permian: Near Chapman's Creek, 18 miles above Fort Riley, Kansas.

1866. Aviculopecten occidentalis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 331, pl. 27, figs. 4, 5, 5a.

Upper Coal Measures: Saline Creek, Gallatin County, Illinois.

1866. Pecten Missouriensis? Geinitz, Carb. und Dyas in Nebr., p. 35, tab. 2, fig. 18.
Nebraska City, Nebraska.

1872. Aviculopecten eccidentalis. Meck, U. S. Geol. Surv. Nebr., p 191, pl. 9, fig. 10.

Upper Coal Measures: Rock Bluff, Bennett's Mill, Wyoming and Nebraska City, Nebraska; Illinois, Missouri, Iowa, Kansas, Kentucky.

Coal Measures: Black Hills, Dakota.

1876. Avioulopecten occidentalis. White, Powell's Rep. Geol. Uinta Mts., p. 90. Lower Aubrey Group: Two miles above Belleview, Utah.

1877. Ariculopecten occidentalis. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 146, pl. 12, figs. 8a, b. Carboniferous: Camp Apache, Arizona.

1884. Aviculopecten occidentalis. White, 13th Rep. Geol. Surv. Ind., p. 143, pl. 28, fig. 2.

Coal Measures: Pike and Gibson counties, Indiana.

1886. Aviculopecten occidentalis. Heilprin, 2d Geol. Surv. Penn., Ann. Rep. for 1885, p. 455, fig. 5a, p. 442, fig. 5.

Mill Creek, L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.

1886. Aviculopecten occidentalis. Heilprin, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 270, fig. 5, p. 271, fig. 5a.

Mill Creek, L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania. Bull. 153-8

## Aviculopecten occidentalis Shumard—Continued.

<sup>2</sup> 1891. Ariculopecten occidentalis. White, Bull. U. S. Geol. Surv., No. 77, p. 29, pl. 4, fig. 1.

Permian: Military Crossing, Baylor County, Texas.

1894. Avioulopeoten occidentalis. Keyes, Mo. Geol. Surv., vol. 5, p. 110, pl. 42, fig. 3.

Upper Coal Measures: Plattsburg and Kansas City, Missouri.

1897. Aviculopecten occidentalis. Smith, Proc. Am. Phil. Soc., vol. 35, p. 84.

Lower Coal Measures: Conway County, Arkansas.

## Aviculopecten occidentalis Winchell. See Aviculopecten iowensis.

## Aviculopecten orestes Worthen.

1884. Aviculopecten orestes. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 18. Keokuk L. S.: Warsaw, Illinois.

1890. Aviculopecten orestes. Worthen, Geol. Surv. Ill., vol. 8, p. 112, pl. 22, fig. 6. Keokuk L. S.: Warsaw, Illinois.

#### Aviculopecten oweni Meek and Worthen.

1860. Aviculopecten Oweni. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 452. Keokuk L. S.: Near Warsaw, Illinois.

1866. Aviculopeoten Oweni. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 256, pl. 18, figs. 2a-c.
Keokuk Group: Near Warsaw, Illinois.

1888. Aviculopecten (cf. oweni). Herrick, Bull. Den. Univ., vol. 3, p. 52, pl. 3, fig. 5. Waverly Group: Licking County, Ohio.

#### Aviculopecten parvulus Hall and Whitfield.

1877. Ariculopecten parvulus. Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 274, pl. 6, fig. 6.

Upper Coal Measures L. S.: Foothills southeast of Salt Lake City, Wahsatch Range, Utah.

## Aviculopecten pellucidus Meek and Worthen.

1860. Avioulopecten pellucidus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 455.

Coal Measures: Adams County, Illinois.

1866. Aviculopecton pellucidus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 327, pl. 26, figs. 5a, b.

Lower Coal Measures: Adams County, Illinois.

## Aviculopecten perelongatus Herrick.

1888. Aviculopecton perelongatus. Herrick, Bull. Den. Univ., vol. 3, p. 50. Waverly Group: Licking County, Ohio.

#### Aviculopecten peroccidens Walcott.

1884. Aviculopecten peroccidens. Walcott, Pal. Eureka Dist., p. 227, pl. 8, fig. 8. Lower Carboniferous: Eureka District, Nevada.

#### Aviculopecten pintonsis Walcott.

1884. Aviculopeoten Pintöensis. Walcott, Pal. Eureka Dist., p. 228, pl. 8, fig. 6.
Lower Carboniferous: Eureka District, Nevada.

#### Aviculopecten providencesis Cox.

1857. Pecten providencesis. Cox, Geol. Rep. Ky., vol. 3, p. 566, pl. 8, fig. 1. Coal Measures: Providence, Hopkins County, Kentucky.

#### Aviculopecten rectalaterarius Cox.

1857. Avicula recta-laterarea. Cox, Geol. Rep. Ky., vol. 3, p. 571 pl. 9, fig. 2.
Coal Measures: Union County, Kentucky; Gallatin County, Illinois.

#### Aviculopecten reticulatus Dawson.

1868. Aviculopecten reticulatus. Dawson, Acad. Geol., p. 306, fig. 112. Carboniferous L. S.: Gay's River, Nova Scotia.

## Aviculopecten ringens Swallow.

1858. Pecten ringens. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 184.
Permian: Valley of Cottonwood, Kansas.

#### Aviculopecten scalaris Herrick.

1887. Avioulopecten scalaris. Herrick, Bull. Den. Univ., vol. 2, p. 26, pl. 1, fig. 8. Coal Measures: Flint Ridge, Ohio.

## Aviculopecten sculptilis Miller.

1891. Aviculopecten sculptilis. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 92, pl. 20, fig. 5.

- Coal Measures: Kansas City, Missouri.

1892. Aviculopecten sculptilis. Miller, 17th Rep. Geol. Surv. Ind., p. 702, pl. 20, fig. 5.

Coal Measures: Kansas City, Missouri.

#### Aviculopecten simplex Dawson.

1868. Aviculopecten simplex. Dawson, Acad. Geol., p. 306, figs. 13a, b. Carboniferous L. S.: Shubenacadie, Windsor, etc., Nova Scotia.

#### Aviculopecten sorer Herrick.

1887. Ariculopecten sorer. Herrick, Bull. Den. Univ., vol. 2, p. 27, pl. 1, fig. 7; pl. 3, fig. 16.

Coal Measures: Flint Ridge, Ohio.

## Aviculopecten spinuliferus Meek and Worthen.

1870. Aviculopecten spinuliferus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 39.

Keokuk Group: Crawfordsville, Indiana.

1884. Aviculopecton spinuliferus. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 20.

Keokuk Shale: Crawfordsville, Indiana.

1890. Aviculopecten spinuliferus. Worthen, Geol. Surv. Ill., vol. 8, p. 116, pl. 22, fig. 1.

Keokuk Shale: Crawfordsville, Indiana.

## Aviculopecten talboti Worthen.

1884. Aviculopecten talboti. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 21.
St. Louis L. S. (oolite beds): Monroe County, Illinois.

1890. Aviculopecton talboti. Worthen, Geol. Surv. Ill., vol. 8, p. 114, pl. 22, figs. 11, 11a.

St. Louis L. S. (oolite): Monroe County, Illinois.

#### Aviculopecten tenuicostus Winchell.

1863. Aviculopecten tenuicostus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 10. Yellow S. S.: Burlington, Iowa.

1865. Aviculopecton tenuicostus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 125. Marshall Group: Rockford, Indiana; Hillsdale, Michigan.

## Aviculopecten utahensis Meek.

1860. Pecten Utahensis. Meek, Proc. Acad. Nat. Sci. Phil., p. 310.

Upper Carboniferous: Summit Spring Pass, between Long and Ruby valleys; latitude, 39° 33'; longitude, 115° 12'.

1876. Aviculopecton Utahensis. Meek, Simpson's Expl. Gt. Basin Utah, p. 354, pl. 1, figs. 9a-c.

Upper Carboniferous: Summit Spring Pass, between Long and Ruby valleys.

## Aviculopecten utahensis Meek—Continued.

1877. Aviculopecten Utahensis. Meek, U. S. Geol. Expl., 40 Par., vol. 4, p. 95, pl. 9, figs. 7, 7d.

Carboniferous L.S.: Latitude, 39° 33' north; longitude, 115° 12' west, Nevada.

## Aviculopecten varsoviensis Worthen.

1883. Avioulopecten Varsoviensis. Worthen, Geol. Surv. Ill., vol. 7, p. 321, fig. Keokuk L. S.: Near Warsaw, Illinois.

#### Aviculopecten weberensis Hall and Whitfield.

1877. Aviculopecten Weberensis. Hall and Whitfield, U. S. Geol. Expl., 40 Par., vol. 4, p. 273, pl. 6, fig. 5.

Upper Coal Measures: Foothills of Wahsatch Range, southeast of Salt Lake City, Utah.

#### Aviculopecten whitei Meek.

1868. Avicula. Rogers, Geol. Rep. Penn., vol. 2, p. 833, fig. 689.

1872. Aviculopecten Whitei. Meek, U. S. Geol. Surv. Nebr., p. 195, pl. 4, figs. 11a-c. Upper Coal Measures: Brownville, Nebraska. Coal Measures: Iowa, Illinois, Pennsylvania.

1891. Aviculopecten whitei. Keyes, Proc. Acad. Nat. Sci. Phil., p. 248. Lower Coal Measures: Des Moines, Iowa.

## Aviculopecten williamsi Meek.

1871. Aviculopecton't williamsi. Meek, Proc. Acad. Nat. Sci. Phil., p. 178. Chouteau L. S.: Chouteau Springs, Boone County, Missouri.

## Aviculopecten winchelli. See Crenipecten winchelli.

## Aviculopecten (species undetermined).

1868. Aviculopecten. Dawson, Acad. Geol., p. 307.
Carboniferous L. S.: Shubenacadie, Nova Scotia.

1887. Avicalopecten? sp.? Herrick, Bull. Den. Univ., vol. 2, p. 25, pl. 3, fig. 18. Coal Measures: Flint Ridge, Ohio.

1887. Aviculopecten sp. f Herrick, Bull. Den. Univ., vol. 2, p. 27, pl. 1, fig. 6. Coal Measures: Flint Ridge, Ohio.

1887. Aviculopecten? Herrick, Bull. Den. Univ., vol. 2, pl. 1, fig. 3. Coal Measures: Flint Ridge, Ohio.

1887. Aviculopectes sp. f Herrick, Bull. Den. Univ., vol. 2, pl. 3, fig. above No. 19. Coal Measures: Flint Ridge, Ohio.

1888. Aviculopecten, right valve. Herrick, Bull. Den. Univ., vol. 3, pl. 3, fig. 7. Waverly Group: Licking County, Ohio.

1888. Aviculopecton sp. Herrick, Bull. Den. Univ., vol. 3, pl. 7, fig. 28. Waverly Group: Licking County, Ohio.

1888. Aviculopecten sp. Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 10.
Waverly Group: Cuyahoga Falls, Ohio.

1888. Aviculopecten sp. Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 11.
Waverly Group: Cuyahoga Falls, Ohio.

1888. Aviculopecten sp. Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 12. Waverly Group: Cuyahoga Falls, Ohio.

1897. Aviculopecten? sp. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 264, pl. 19, fig. 13.

Batesville S. S.: Batesville, Arkansas.

## AVICULOPINNA Meek, 1867.

#### Aviculopinna americana Meek.

1866. Arioula pinnaeformis. Geinitz, Carb. und Dyas in Nebr., p. 31, tab. 2, fig. 13. Nebraska City, Nebraska. (Not Solen pinnaeformis Geinitz, 1848.)

#### Aviculopinna americana Meek—Continued.

1867. Aviculopinna Americana. Meek, Am. Jour. Sci. (2), vol. 44, p. 282.

1872. Ariculopinna Americana. Meek, U. S. Geol. Surv. Nebr., p. 197, pl. 9, figs. 12a-d.

Upper Coal Measures: Nebraska City, Nebraska; Iowa.

1875. Aviculopinna Americana. Meek, Pal. Ohio, vol. 2, p. 337, pl. 20, fig. 2.

Lower Coal Measures: Ohio.

Upper Coal Measures: Nebraska City, Nebraska; Western Iowa.

1887. Aviculopinua americana. Herrick, Bull. Den. Univ., vol. 2, p. 38, pl. 1, fig. 20. Coal Measures: Flint Ridge, Ohio.

1894. Aviculopinna americana. Keyes, Mo. Geol. Surv., vol. 5, p. 115. Upper Coal Measures: Forest City, Missouri.

## Aviculopinna illinoiensis Worthen.

1884. Avioulopinna illinoiensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 13.

Coal Measures: Peoria County, Illinois.

1890. Avioulopinna illinoiensis. Worthen, Geol. Surv. Ill., vol. 8, p. 128, pl. 20, figs. 5, 5a.

Coal Measures: Peoria County, Illinois.

## (AXINUS Sowerby, 1821.)

## Axinus ovatus. See Schizodus ovatus.

#### (Axinus securus Shumard.)

1859. Azinus securus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 397. White Permian L. S.: Guadalupe Mountains.

## AXOPHYLLUM Edwards and Haime, 1850.

#### Axophyllum infundibulum Worthen.

1875. Azophyllum infundibulum. Worthen, Geol. Surv. Ill., vol. 6, p. 525, pl. 32, fig. 7.

Coal Measures: Clark County, Illinois.

# Axophyllum rude White and St. John.

1868. Azophyllum rudis. White and St. John, Trans. Chicago Acad. Sci., vol. 1, p. 115.

Upper Coal Measures: Madison, Ringgold, and Pottawattamic counties Iowa.

1875. Azophyllum rudis. Meek and Worthen, Geol. Surv. Ill., vol. 6, p. 525, pl. 32, figs. 6a-c.

Coal Measures: Near Collinsville, St. Clair County, Illinois.

1884. Azophyllum rudis. White, 13th Rep. Geol. Surv. Ind., p. 118, pl. 23, figs, 8, 9. Coal Measures: Newport, Indiana.

1894. Axophyllum rude. Keyes, Mo. Geol. Surv., vol. 4, p. 107, pl. 12, figs. 5a, b. Upper Coal Measures: Kansas City, Missouri.

## BACTROPORA Hall, 1887.

#### Bactropora simplex Ulrich.

1890. Bactropora simplex. Ulrich, Geol. Surv. Ill., vol. 8, p. 663, pl. 70, figs. 14-14b, pl. 71, figs. 6, 6a.

Keokuk Group: Keokuk, Iowa; Nauvoo and Warsaw, Illinois.

1894. Bactropora simplex. Keyes, Mo. Geol. Surv., vol. 5, p. 35. Keokuk L. S.: Clark County, Missouri.

## BAIRDIA McCoy, 1844.

#### Bairdia cestriensis Ulrich.

1891. Bairdia cestriensis. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 210, pl. 17, figs. 6a-c, 7a, b.

Chester Group: Near Grayson Springs, Kentucky.

#### Bairdia (species undetermined).

1859. Bairdia sp. (?). Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 388. White Permian L. S.: Guadalupe Mountains.

#### BAKEVELLIA King, 1849.

#### Bakevellia antiqua Munster.

1858. Bakevellia antiqua. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 189. Upper Permian: Near Smoky Hill Fork, Kansas.

1868. Bakevellia antiqua. Dawson, Acad. Geol., p. 301.
Carboniferous L. S.: Gay's River and Windsor, Nova Scotia.

## Bakevellia illinoiensis Worthen.

1884. Bakevellia illinoicnesis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 14. Upper Coal Measures: Lasalle, Illinois.

1890. Bakevellia illinoiensis. Worthen, Geol. Surv. Ill., vol. 8, p. 126, pl. 18, figs. 4, 4a.

Upper Coal Measures: Lasalle, Illinois.

## Bakevellia parva Meek and Hayden.

1858. Bakevellia parva. Meek and Hayden, Trans. Albany Inst., vol. 4, p. 78. Permian: Near mouth of Smoky Hill Fork of Kansas River.

1864. Bakevellia parva. Meek and Hayden, Pal Upper Mo., p. 57, pl. 2, figs. 12a, b. Permian: Near mouth of Smoky Hill Fork of Kansas River and on Cottonwood Creek, Kansas.

1877. Bakerellia parva. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 153, pl. 11, figs. 7a, b.

Carboniferous: Bear Spring, Camp Wingate, New Mexico, and near Jacob's Pool, Arizona.

#### Bakevellia pulchra Swallow.

1858. Bakerellia (†) pulchra. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 189. Lower Permian: Valley of Kansas, Kansas.

# BARROISELLA Hall, 1892.

#### Barroisella subspatulata Meek and Worthen.

1868. Lingula subspatulata. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 437, pl. 13, fig. 1.

Black Shale: Near Jonesboro, Union County, Illinois.

1869. Lingula Subspatulata? Winchell, Safford's Geol. of Tenn., p. 444.
Shales just above Black Shale: Hickman and Maury counties, Tennessee.

1870. Lingula subspatulata? Winchell, Proc. Am. Phil. Soc., vol. 11, p. 248. Waverly Group: Tennessee; Rockville, Ohio.

1892. Barroisella subspatulata. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, p. 63, pl. 2, figs. 14-16, and p. 164.

Black Shale: White River, near Rockford, Indiana.

#### BARYCRINUS Wachsmuth, 1868.

## Barycrinus angulatus Meek and Worthen.

1860. Cyathorinus angulatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 393.

Keokuk L. S.: Nauvoo, Illinois.

#### Barycrinus angulatus Meek and Worthen—Continued.

1866. Cyathocrinus angulatus. Meek and Worthen, Geol. Surv. 111., vol. 2, p. 234, pl. 12, fig. 4.

Keokuk L. S.: Nauvoo, Illinois.

#### Barycrinus blairi Miller.

1891. Barycrinus Blairi. Miller, Bull. Geol. Surv. Mo., No. 4, p. 25, pl. 3, figs. 11-13-Keokuk Group: Boonville, Missouri.

## Barycrinus boonvillensis Miller.

1891. Barycrinus Boonvillensin. Miller, Bull. Gool. Surv. Mo., No. 4, p. 24, pl. 3, fig. 5.

Keokuk Group: Boonville, Missouri.

## Barycrinus bullatus Hall.

1858. Cyathocrinus bullatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 624, pl. 18, fig. 1a. Keokuk L. S.: Green County, Illinois.

1858. Cyathocrinus protuberans. Hall, Geol. Iowa, vol. 1, pt. 2, p. 626, pl. 18, fig. 9. Keokuk L. S.: Warsaw, Illinois.

#### Barycrinus cornutus Owen and Shumard.

1850. Cyathocrinus cornutus. Owen and Shumard, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 63, pl. 7, fig. 8.

Carboniferous L. S.: Burlington, Iowa.

1852. Cyathocrinus cornutus. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 591, tab. 5A, figs. 8a, b. Carboniferous L. S.: Burlington, Iowa.

## Barycrinus crassibrachiatus Hall.

1860. Cyathocrinus crassibrachiatus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 60. Keokuk L. S.: Warsaw, Illinois.

## Barycrinus elrodi Miller and Gurley.

1896. Barycrinus elrodi. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 38, pl. 2, figs. 25-27.

St. Louis Group: Spergen Hill, Indiana.

#### Barycrinus expansus Miller and Gurley.

1894. Baryorinus expansus. Miller and Gurley, Bull. No. 5, Ill. State Mus. Nat. Hist., p. 41, pl. 4, fig. 2.

Keokuk Group: Tennessee.

#### Barycrinus formosus Miller and Gurley.

1894. Barycrinus formosus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 33, pl. 3, fig. 6.

Keokuk Group: Washington County, Indiana.

#### Barycrinus geometricus Meek and Worthen.

1868. Cyathocrinus? (sp. undetermined). Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 518, pl. 20, figs. 5a-c.

Keokuk Group: Warsaw, Illinois.

1873. Barycrinus geometricus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 485, pl. 12, fig. 3.

Keokuk Group: Near Warsaw, Illinois.

## Barycrinus herculeus Meek and Worthen.

1868. Baryerinus Hoveyi var. Herculeus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 341.

Keokuk Group: Crawfordsville, Indiana.

1873. Barycrinus Hoveyi var. Herculeus. Meek and Worthen, Geol. Surv. Ill., vol. 5. p. 485, pl. 13, fig. 2.

Keokuk Group: Crawfordsville, Indiana.

# Barycrinus hoveyi Hall.

- Cyathocrinus horcyi. Hall, Desc. New Spec. Crin., p. 5.
   Keokuk L. S.
- 1861. Cyathocrinus Horeyi. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 293. Keokuk L. S.: Crawfordsville, Indiana.
- 1872. Scaphiocrinus Horeyi. Hall, Photo. Plates of Crinoids, pl. 5, fig. 11.
- 1873. Barycrinus Hoveyi. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 486, pl. 13, fig. 1.

Keokuk Group: Crawfordsville, Indiana.

1894. Barycrinus horeyi. Keyes, Mo. Geol. Surv., vol. 4, p. 209. Keokuk L. S.: Boonville, Missouri; Keokuk, Iowa.

# Barycrinus hoveyi var. herculeus. See Barycrinus herculeus.

## Barycrinus kelloggi White.

1862. Cyathocrimus Kelloggi. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 8. Keokuk L. S.: Near Burlington, Iowa.

## Barycrinus magister Hall.

1858. Cyathocrinus magister. Hall, Geol Iowa, vol. 1, pt. 2, p. 628, pl. 18, figs. 2a-b, 3a-b.

Keokuk L. S.: Keokuk, Iowa; opposite Madison in Illinois.

# Barycrinus magnificus Meek and Worthen.

1868. Barycrinus magnificus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 340.

Keokuk Group: Near Biggsville, Illinois.

1873. Barycrinus magnificus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 483, pl. 12, fig. 2.
Keokuk Group: Near Biggsville, Henderson County, Illinois.

1894. Barycrinus magnificus. Keyes, Mo. Geol. Surv., vol. 4, p. 210, pl. 26, fig. 4. Keokuk L. S.: Keokuk, Iowa.

#### Barycrinus mammatus Worthen.

1873. Barycrinus mammatus. Worthen, Geol. Surv. Ill., vol. 5, p. 486, pl. 15, fig. 4. Keokuk Group: Otter Creek, Jersey County, Illinois.

#### Barycrinus meekianus Shumard.

- 1855. Poteriocrinus meekianus. Shumard, Geol. Rep. Mo., p. 188, Pl. A, figs. 7a, b. Chouteau or Encrinital L. S.: Mount Vernou, Moniteau County, Missouri.
- 1892. Cyathocrinus meekianus. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 44.
  Chouteau L. S.: Pettis County, Missouri.
- 1894. Cyathocrinus meekianus. Miller, 18th Rep. Geol. Surv. Ind., p. 298. Chouteau L. S.: Pettis County, Missouri.
- 1894. Barycrinus meekianus. Keyes, Mo. Geol. Surv., vol. 4, p. 211. Burlington L. S.: Mount Vernon, Missouri.

#### Barycrinus neglectus Miller and Gurley.

1896. Baryorinus neglectus. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 28, pl. 2, figs. 10-12. Keokuk Group: Crawfordsville, Indiana.

## Barycrinus pentagonus Worthen.

1873. Barycrinus pentagonus. Worthen, Geol. Surv. Ill., vol. 5, p. 487, pl. 15, fig. 3. Keokuk L. S.: Otter Creek, Jersey County, Illinois.

## Barycrinus princeps Miller and Gurley.

1890. Barycrinus princeps. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 368, pl. 9, figs. 2, 3.

Keokuk Group: Crawfordsville, Indiana.

#### Barycrinus rhombiferus Owen and Shumard.

- 1852. Poteriocrinus rhombiferus. Owen and Shumard, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 89, pl. 11, fig. 2.
  - Carboniferous L. S.: Burlington, Iowa.
- 1852. Poteriocrinus rhombiferus. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 595, tab. 5B, figs. 2a-c.
  - Carboniferous L. S.: Burlington, Iowa.
- 1894. Barycrinus rhombiferus. Keyes, Mo. Geol. Surv., vol. 4, p. 210. Burlington L. S.: Louisiana, Missouri.

## Barycrinus sampsoni Miller and Gurley.

1896. Barycrinus sampsoni. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 81, pl. 5, figs. 1-3.

Burlington Group: Sedalia, Missouri.

## Barycrinus sculptilis Hall.

- 1860. Cyathorinus sculptilis. Hall, Supp., vol. 1, pt. 2, Geol. Rep. Ia., p. 59. Burlington L. S.: Burlington, Iowa.
- 1860. Cyathorinus scitulus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 393. Burlington L. S.: Burlington, Iowa.
- 1861. Cyathorrinus latus. Hall, Desc. New Spec. Crin., p. 5. Burlington L. S.
- 1861. Cyathocrinus latus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 292. Burlington L. S.: Burlington, Iowa.
- 1861. Cyathocrinus sculptilis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 148.
- 1866. Cyathocrinus sculptilis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 178, pl. 15, figs. 2a, b.
  Burlington L. S.: Burlington, Iowa.
- 1873. Cyathocrinus sculptilis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 401, pl. 4, fig. 5.

Burlington L. S.: Burlington, Iowa.

1893. Barycrinus sculptilis. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 29, pl. 3, fig. 12.

Burlington L. S.: Burlington, Iowa.

#### Barverinus solidus Hall.

- 1861. Cyathocrinus solidus. Hall, Desc. New Spec. Crin., p. 5. Burlington L. S.
- 1861. Cyathocrinus solidus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 293. Burlington L. S.: Burlington, Iowa.

## Barycrinus spectabilis Meek and Worthen.

- 1870. Baryernius spectabilis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 23.
  - St. Louis Group: Otter Creek, Jersey County, Illinois.
- 1873. Barycrinus spectabilis. Meck and Worthen, Geol. Surv. Ill., vol. 5, p. 530, pl. 20, fig. 8.

St. Louis Group: Otter Creek, Jersey County, Illinois.

## Barycrinus spurius Hall.

- 1858. Cyathocrinus spurius. Hall, Geol. Iowa, vol. 1, pt. 2, p. 625, pl. 18, figs. 7, 8. Keokuk L. S.: Warsaw, Illinois.
- 1890. Barycrinus spurius. Worthen, Geol. Surv. Ill., vol. 8, p. 99, pl. 14, fig. 4. Keokuk L. S.: Warsaw, Illinois.
- 1894. Barycrinus spurius. Keyes, Mo. Geol. Surv., vol. 4, p. 209. Keokuk L. S.: Wayland, Missouri; Keokuk, Iowa.

#### Barycrinus stellatus Hall.

- 1858. Cyathocrinus stellatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 623, pl. 16, figs. 3, 8.
  Keokuk L. S.: Warsaw, Illinois.
- 1865. Cyathocrinus quinquelobus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 150.

Keokuk Group: Warsaw, Illinois.

1968. Cyathorinus quinquelobus. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 519, pl. 20, fig. 6a, b.

Keokuk Group: Warsaw, Illinois.

1894. Baryorinus stellatus. Keyes, Mo. Geol. Surv., vol. 4, p. 210.

Keokuk L. S.: Boonville and Curryville, Missouri; Keokuk, Iowa.

#### Barverinus stellifer Miller.

1892. Baryorinus stellifer. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 46, pl. 8, figs. 6-9.

Keokuk Group: Harrison County, Indiana.

#### Barycrinus striatus Worthen.

1875. Barycrinus striatus. Worthen, Geol. Surv. Ill., vol. 6, p. 515, pl. 29, fig. 5. Keokuk L. S.: Otter Creek, Jersey County, Illinois.

Barycrinus subtumidus. See Cyathocrinus subtumidus.

#### Barverinus thomæ Hall.

1860. Cyathocrinus thomæ. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia, p. 61. Warsaw L. S.: Warsaw, Illinois.

## Barycrinus tumidus Hall.

1858. Cyathoorinus tumidus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 624, pl. 18, figs. 1b-c.

Keokuk L. S.: Warsaw, Illinois.

1890. Barycrinus tumidus. Worthen, Geol. Surv. Ill., vol. 8, p. 100, pl. 14, fig. 6. Keokuk L. S.: Near Hamilton, Illinois.

#### Barycrinus wachsmuthi Meek and Worthen.

 Cyathocrinus Wachsmuthi. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 136.

Burlington L. S.: Burlington, Iowa.

1868. Cyathorinus Wachsmuthi. Meek and Wortlen, Geol. Surv. Ill., vol. 3, p. 482, pl. 16, fig. 5.

Burlington Group: Burlington, Iowa.

# Barycrinus washingtonensis Miller and Gurley.

1895. Baryorinus washingtonensis. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 49, pl. 4, figs. 18, 19.

Keokuk Group: Washington County, Indiana.

# BATOCRINUS Casseday, 1854.

Batocrinus abscissus. See Dizygocrinus euconus var. abscissus.

#### Batocrinus adamsensis Miller and Gurley.

1896. Batocrinus adamsensis. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 14, pl. 1, figs. 34, 35.

Burlington Group: Adams County, Illinois.

#### Batocrinus aquabilis. See Batocrinus subaqualis.

## Batocrinus æqualis Hall.

1858. Actinocrinus æqualis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 592, pl. 11, figs. 4a, b.

Burlington L. S.: Burlington, Iowa.

# Batocrinus sequalis Hall—Continued.

\*1861. Actinocrinus doris. Hall, Desc. New Spec. Crin., p. 15. Burlington L. S.

1894. Batocrinus acqualis. Keyes, Mo. Geol. Surv., vol. 4, p. 179.

Lower Burlington L. S.: Hannibal, Louisiana, and Sedalia, Missouri.

1897. Batoorinus aqualis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 371, pl. 28. figs. 5, 6.

Lower Burlington L. S.: Burlington, Iowa; Southern Missouri.

Batocrinus æquibrachiatus. See Lobocrinus æquibrachiatus.

# Batocrinus affinis Miller and Gurley.

1896. Batocrinus affinis. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 55, pl. 4, figs. 8, 9.
Burlington Group: Sagetown, Illinois.

Batocrinus agnatus. See Macrocrinus jucundus.

#### Batocrinus alborsi Miller and Gurley.

1896. Batocrinus albersi. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 38, pl. 2, figs. 6-8.

Burlington Group: Burlington, Iowa.

# Batocrinus altiusculus. See Eutrochocrinus christyi.

# Batocrinus approximatus Miller and Gurley.

1896. Batocrinus approximatus. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 56, pl. 4, figs. 10-12.
Burlington Group: Burlington, Iowa.

## Batocrinus arcula Miller and Gurley.

1895. Batocrinus arcula. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 16, pl. 2, figs. 3-5.
St. Louis Group: Washington County, Indiana.

#### Batocrinus argutus Miller and Gurley.

1896. Batorinus argutus. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 9, pl. 1, figs. 8, 9.
Burlington Group: Sedalia, Missouri.

1896. Batocrinus argutus. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 66.

## Batocrinus asper Miller and Gurley.

1896. Batoorinus asper. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 13, pl. 1, figs. 15, 16.
Burlington Group: Sedalia, Missouri.

#### Batocrinus asperatus Miller and Gurley.

1896. Batocrinus asperatus. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 12, pl. 1, figs. 13, 14.

Burlington Group: Adams County, Illinois.

Batocrinus aspratilis. See Batocrinus clypeatus.

## Batocrinus basilicus Miller and Gurley.

1896. Batocrimus basilicus. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 11, pl. 1, figs. 10-12.

Burlington Group: Sedalia, Missouri.

Batocrinus bisbrachiatus. See Eutrochocrinus christyi.

Batocrinus biturbinatus. See Dizygocrinus biturbinatus.

Batocrinus blairi. See Eretmocrinus leucosia.

Batocrinus boonvillensis. See Dizygocrinus originarius var. adultus.

#### Batocrinus brittsi Miller.

1892. Batocrinus brittsi. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 33, pl. 5, figs. 21-23.

Burlington Group: Sedalia, Missouri.

1894. Batocrinus brittsi. Miller, 18th Rep. Geol. Surv. Ind., p. 287, pl. 5, figs. 21-23.

Burlington Group: Sedalia, Missouri.

#### Batocrinus broadheadi Miller and Gurley.

1895. Batocrinus broadheadi. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 15, pl. 1, figs. 10, 11.

Keokuk Group: Boonville, Missouri.

Batocrinus bulbosus. See Lobocrinus inflatus.

#### Batocrinus burketi Miller and Gurley.

1895. Batocrinus burketi. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 19, pl. 2, fig. 9.

Keokuk Group: Hamilton, Illinois.

## Batocrinus calvini Rowley.

1890. Batocrinus calvini. Rowley. Am. Geol., vol. 5, p. 146, fig. Lower Burlington L. S.: Louisiana, Missouri.

1894. Batocrinus calvini. Keyes, Mo. Geol. Surv., vol. 4, p. 180, pl. 23, fig. 4. Lower Burlington L. S.: Louisiana, Missouri.

1897. Batocrinus Calvini. Wachsmuth and Springer, N. Am. Crin. Cam., p. 373, pl. 46, figs. 8a, b.
Lower Burlington L. S.: Louisiana, Missouri.

# Batocrinus calyculus Hall.

1860. Actinocrinus calyculus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 55, pl. 1, figs. 12a-c.

Warsaw L. S.: Spergen Hill, Indiana.

1866. Actinocrinus calyculus var. hardinensis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 253.

Upper St. Louis Group: Hardin County, Illinois.

# Batocrinus cantonensis Miller and Gurley.

1890. Batocrinus cantonensis. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 354, pl. 6, fig. 9.

Keokuk Group: Near Canton, Indiana.

1897. Batocrinus cantonensis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 383, pl. 27, figs. 7a, b.

Keokuk Group: Canton, Indiana.

#### Batocrinus caroli Hall.

1860. Actinocrinus caroli. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 54, pl. 1, fig. 11.

Warsaw L. S.: Warsaw, Illinois.

Batocrinus cassedayanus. See Lobocrinus longirostris.

#### Batocrinus casualis Miller and Gurley.

1895. Batocrinus casualis. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 15, pl. 1, figs. 17, 18.

Keokuk Group: Tennessee.

# Batocrinus casula Miller and Gurley.

1895. Batocrinus casula. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 8, pl. 1, figs. 7, 8.

Keokuk Group: Little Barren River, Kentucky.

## Batocrinus christvi. See Eutrochocrinus christvi.

## Batocrinus cistula Miller and Gurley.

1896. Batocrinus cistula. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 18, pl. 1, figs. 24-26.

St. Louis Group: Lanesville, Indiana.

#### Batocrinus clypeatus Hall.

1860. Actinocrinus clypeatus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 12. Burlington L. S.: Burlington, Iowa.

1860. Actinocrinus inornatus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 24. Burlington L. S.: Burlington, Iowa.

1860. Actinocrinus papillatus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 29. Burlington L. S.: Burlington, Iowa.

1872. Actinocrinus clypeatus. Hall, Photo. Plates of Crinoids, pl. 3, fig. 12.

1872. Actinocrinus papillatus. Hall, Photo. Plates of Crinoids, pl. 3, figs. 10, 11. 1892. Batocrinus comparilis. Miller, Adv. Sheets, 18th Rep. Gool. Surv. Ind., p. 32, pl. 5, figs. 18-20. Burlington Group: Sedalia, Missouri.

1893. Batocrinus inornatus. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 15, pl. 2, figs. 1-3.

Burlington L. S.: Burlington, Iowa.

1894. Batocrinus clypeatus. Keyes, Mo. Geol. Surv., vol. 4, p. 179. Lower Burlington L. S.: Louisiana, Missouri.

1894. Batocrinus comparilis. Miller, 18th Rep. Geol. Surv. Ind., p. 286, pl. 5, figs. 18-20.

Burlington Group: Sedalia, Missouri

1894. Batocrinus aspratilis. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 21, pl. 5, figs. 5, 6. Burlington Group: Sedalia, Missouri.

1897. Batocrinus olypeatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 380, pl. 27, figs. 8a-e.

Lower Burlington L. S.: Burlington, Iowa.

#### Batocrinus cognatus Miller and Gurley.

1896. Batocrinus cognatus. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 60, pl. 4, figs. 18-21. Burlington Group: Burlington, Iowa.

Batocrinus comparilis. See Batocrinus clypeatus.

#### Batocrinus complanutus Miller and Gurley.

1896. Batocrinus complanutus. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 27, pl. 1, figs. 19-20.

Burlington Group: Burlington, Iowa.

## Batocrinus consanguineus Miller and Gurley.

1896. Batocrinus consanguineus. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 63, pl. 4, figs. 22, 23. Burlington Group: Burlington, lowa.

## Batocrinus copiosus Miller and Gurley.

1894. Batocrinus copiosus. Miller and Gurley, Bull. No. 5, Ill. State Mus. Nat. Hist , p. 51, pl. 5, figs. 5, 6.

Kaskaskia Group: Little Barren River.

#### Batocrinus crawfordsvillensis. See Dizygocrinus crawfordsvillensis.

#### Batocrinus curiosus Miller and Gurley.

1895. Batocrinus curiosus. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 6, pl. 1, figs. 4-6. Keokuk Group: Allen County, Kentucky.

Batocrinus davisi. See Dizygocrinus unionensis.

#### Batocrinus decoris Miller.

1891. Batocrinus decoris. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 61, pl. 10, figs. 7, 8.

Warsaw Group: Spergen Hill, Indiana.

1892. Batocrinus decoris. Miller, 17th Rep. Geol, Surv. Ind., p. 671, pl. 10, figs. 7, 8. Warsaw Group: Spergen Rill, Indiana.

#### Batocrinus decrepitus Miller.

1892. Batocrinus decrepitus. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 34,

Keokuk Group: Montgomery County, Indiana.

1894. Batocrinus decrepitus. Miller, 18th Rep. Geol. Surv. Ind., p. 288, pl. 5, fig. 24 Keokuk Group: Montgomery County, Indiana.

## Batocrinus delicatulus Miller and Gurley.

1896. Batocrinus delicatulus. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 12, pl. 1, figs. 20, 21.

Keokuk Group: Boonville, Missouri.

Batocrinus discoideus. See Batocrinus subæqualis.

Batocrinus divalis. See Dizygocrinus unionensis var. divalis.

Batocrinus dodecadactylus. See Dizygocrinus dodecadactylus.

# Batocrinus douglassi Miller and Gurley.

1897. Batocrinus douglassi. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 29, pl. 2, fig. 26.

Burlington or Keokuk Group: Bridger Mountains, near Bozeman, Montana.

Batocrinus elegans. See Batocrinus turbinatus.

# Batocrinus enodatus Miller and Gurley.

1896. Batocrinus enodatus. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 46, pl. 2, figs. 21-23.

Burlington Group: Sagetown, Illinois.

# Batocrinus enodis Miller and Gurley.

1896. Batocrinus enodis. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 25, pl. 1, figs. 16-18.

Burlington Group: Burlington, Iowa.

Batocrinus euconus. See Dizygocrinus euconus.

# Batocrinus faberi. Miller and Gurley.

1896. Batocrinus faberi. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 18, pl. 2, figs. 3, 4.

Burlington Group: Adams County, Illinois.

Batocrinus facetus. See Dizygocrinus facetus.

#### Batocrinus folliculus Miller and Gurley.

1896. Batocrinus folliculus. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 15, pl. 1, figs. 36-38.

Burlington Group: Sedalia, Missouri.

## Batocrinus formaceus Miller and Gurley.

1895. Batocrinus formaceus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 24, pl. 1, figs. 23, 24.

Burlington Group: Sedalia, Missouri.

# Batocrinus germanus Miller and Gurley.

1896. Batocrinus germanus. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 5, pl. 1, figs. 1, 2.

Burlington Group: Sedalia, Missouri.

## Batocrinus glaber Miller and Gurley.

1896. Batocrinus glaber. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 32, pl. 1, figs. 26-28.

Burlington Group: Iowa and Illinois.

## Batocrinus gorbyi. See Dizygocrinus gorbyi.

## Batocrinus grandis Wachsmuth and Springer.

1859. Actinocrinus sp. nobis. Lyon and Casseday, Am. Jour. Sci. (2), vol. 28, p. 240. Clear Creek, Hardin County, Kentucky.

1880. Actinocrinus wachsmuthi. White, Cont. to Inv. Pal. No. 8, p. 162, pl. 40, figs. 1a, b. (Not A. wachsmuthi White, 1862.)

. Keokuk Group: Crawfordsville, Indiana.

1881. Actinocrinus wachsmuthi. 2d.Ann. Rep. Dep. Stat. and Geol. Ind., p. 510, pl. 7, fig. 6.

Keokuk Group: Crawfordsville, Indiana.

1885. Batocrinus grandis. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil., p. 335. (Rev. Palacocr. III. p. 113.)

1897. Batocrinus grandis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 381, pl. 27, figs. 1a-b, 2a-b.

Keokuk Group: Crawfordsville, Indiana.

# Batocrinus gurleyi. See Dizygocrinus gurleyi and Dizygocrinus montgomeryensis.

## Batocrinus heteroclitus Miller and Gurley.

1895. Batocrinus heteroclitus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 31, pl. 1, figs. 37-39.
Keokuk Group: Boonville, Missouri.

# Batocrinus hodgsoni Miller and Gurley.

1896. Batocrinus hodgsoni. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 8, pl. 1, figs. 6, 7. Burlington Group: Adams County, Illinois.

#### Batocrinus honorabilis Miller and Gurley.

1895. Batecrinus honorabilis. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 10, pl. 1, figs. 9, 10. Keokuk Group: Tennessee.

## Batocrinus icosadactylus Casseday.

1854. Batocrinus icosadactylus. Casseday, Zeitsch. d. deutsch. geol. Ges., Band
6, p. 238, taf. 2, figs. 1-1c, 3.
St. Louis Group: Spergen Hill, Indiana.

1892. Batocrinus icosidactylus. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 24, pl. 4, figs. 1-5.

St. Louis Group: Spergen Hill, Indiana.

1894. Batoorinus icosidactylus. Miller, 18th Rep. Geol. Surv. Ind., p. 278, pl. 4, figs. 1-5.

St. Louis Group: Spergen Hill, Indiana.

1897. Batocrinus icosidactylus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 368, pl. 27, figs. 3a-c.

Warsaw L. S.: Spergen Hill, Indiana; Barren County, Kentucky.

#### Batocrinus ignotus Miller and Gurley.

1895. Batocrinus ignotus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 28, pl. 1, figs. 31-33.

Keokuk Group: Boonville, Missouri.

# Batocrinus imparalis Miller and Gurley.

1895. Batocrinus imparalis. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 20, pl. 1, figs. 17, 18.

Burlington Group: Sedalia, Missouri.

## Batocrinus inconsuctus Miller and Gurley.

1895. Batocrinus inconsuctus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 25, pl. 1, figs. 25-27.

Keokuk Group: Boonville, Missouri.

#### Batocrinus incultus Miller and Gurley.

1895. Batocrinus incultus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 21, pl. 1, figs. 19, 20.

Burlington Group: Sedalia, Missouri.

# Batocrinus inflatus. See Lobocrinus inflatus.

#### Batocrinus inopinatus Miller and Gurley.

1895. Batocrinus inopinatus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 36, pl. 2, figs. 4-6.

Keokuk Group: Boonville, Missouri.

# Batocrinus inornatus. See Batocrinus clypeatus.

## Batocrinus insolens Miller and Gurley.

1896. Batocrinus insolens. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 35, pl. 2, figs. 1, 2. Burlington Group: Burlington, Iowa.

# Batocrinus insperatus Miller and Gurley.

1895. Batocrinus insperatus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 22, pl. 1, figs. 21, 22.
 Burlington Group: Sedalia, Missouri.

# Batocrinus insuetus Miller and Gurley.

1895. Batocrinus insuctus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 14, pl. 1, figs. 8, 9.
Keokuk Group: Boonville, Missouri.

## Batocrinus irregularis Casseday.

1854. Batocrinus irregularis. Casseday, Zeitsch. d. deutsch. geol. Ges., Band 6, p. 240, taf. 2, figs 2-2c.

St. Louis Group: Spergen Hill, Indiana.

1892. Batocrinus irregularis. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 26, pl. 4, figs. 6-9.

St. Louis Group: Spergen Hill, Indiana.

1894. Batocrinus irregularis. Miller, 18th Rep. Geol. Surv. Ind., p. 280, pl. 4, figs. 6-9.

St. Louis Group: Spergen Hill, Indiana.

1897. Batocrinus irregularis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 369, pl. 27, figs. 4a-c.

Warsaw L. S.: Spergen Hill, Indiana; Barren County, Kentucky.

# Batocrinus jessieæ Miller and Gurley.

1896. Batocrinus jessiew. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 20, pl. 1, figs. 27-32.

Burlington Group: Sedalia, Missouri.

#### Batocrinus jucundus. See Macrocrinus jucundus.

#### Batocrinus labellum Miller and Gurley.

1895. Batocrinus labellum. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 21, pl. 2, figs. 10-12.

Keokuk Group: Washington County, Indiana.

# Batocrinus laciniosus Miller and Gurley.

1895. Batocrinus laciniosus. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 14, pl. 1, figs. 15, 16.

Keokuk Group: Tennessee.

Batocrinus lætus. See Batocrinus turbinatus.

## Batocrinus laterna Miller and Gurley.

1895. Batocrinus laterna. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 12, pl. 1, figs. 13, 14.

Keokuk Group: White Creek Springs, Tennessee.

#### Batocrinus laura Hall.

- \*1861. Actinocrinus laura. Hall, Desc. New Spec. Criu., p. 15. Burlington L. S.
- 1893. Batoorinus layra. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 17, pl. 1, figs. 15, 16.
  Brown beds of Burlington L. S.: Burlington, Iowa.
- 1894. Batocrinus soyphus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 23, pl. 5, figs. 7-9.
  Burlington Group: Sedalia, Missouri.
- 1894. Batoorinus laura. Keyes, Mo. Geol. Surv., vol. 4, p. 182, pl. 23, fig. ×. Upper Burlington L. S.: Lagrange, Missouri; Quincy, Illinois.
- 1897. Batocrinus laura. Wachsmuth and Springer, N. Am. Crin. Cam., p. 384, pl. 29, figs. 5a-d.
  Upper Burlington L. S.: Burlington, Iowa.

## Batocrinus laura var. sinuosus Hall.

- 1860. Actinocrinus sinuosus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 26. Burlington L. S.: Burlington, Iowa.
- 1872. Actinocrinus sinuosus. Hall, Photo. Plates of Crinoids, pl. 3, figs. 8, 9.
- 1897. Batocrinus laura var. sinuosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 385.

Upper Burlington L. S.: Burlington, Iowa.

## Batocrinus lepidus Hall.

- 1860. Actinocrinus lepidus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 32. Burlington L. S.: Burlington, Iowa.
- 1893. Batoorinus lepidus. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 16, pl. 1, figs. 17, 18.
  Burlington L. S.: Burlington, Iowa.
- 1897. Batocrinus lepidus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 372, pl. 28, figs. 2, 3.
  Lower Burlington L. S.: Burlington, Iowa; Southern Missouri.

#### Batocrinus levigatus Miller and Gurley.

1896. Batocrinus levigatus. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 29, pl. 1, figs. 21, 22.
Burlington Group: Burlington, Iowa.

#### Batocrinus levis Miller and Gurley.

1896. Batocrinus levis. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 23, pl. 1, figs. 13-15.
Burlington Group: Burlington, Iowa.

Batocrinus longirostris. See Lobocrinus longirostris.

Batocrinus lovei. See Eutrochocrinus lovei.

Batocrinus lyonanus. See Dizygocrinus biturbinatus.

#### Batocrinus macbridei Wachsmuth and Springer.

1890. Batocrinus mac-bridei. Wachsmuth and Springer, Geol. Surv. Ill., vol. 8, p. 172, pl. 15, fig. 4; pl. 16, figs. 11, 12. Kinderhook Group: Legrand, lowa.

Bull, 153---9

## Batocrinus macbridei Wachsmuth and Springer-Continued.

1897. Batocrinus Macbridei. Wachsmuth and Springer, N. Am. Crin. Cam., p. 376, pl. 30, figs. 1-3.

Kinderhook Group: Legrand, Marshall County, Iowa.

## Batocrinus marinus Miller and Gurley.

1890. Batocrinus marinus. Miller and Gurley, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 19, pl. 4, figs. 3, 4.

Keokuk Group: Crawfordsville, Indiana.

1890. Batocrinus marinus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 340, pl. 4, figs. 3, 4.

Keokuk Group: Crawfordsville, Indiana.

#### Batocrinus mediocris. See Dizygocrinus originarius var. adultus.

## Batocrinus modestus Miller and Gurley.

1895. Batocrinus modestus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 30, pl. 1, figs. 34-36.

Keokuk Group: Boonville, Missouri.

## Batocrinus modulus Miller and Gurley.

1896. Batocrinus modulus. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 16, pl. 1, figs. 39-41.

Burlington Group: Adams County, Illinois.

#### Batocrinus montgomeryensis. See Dizygocrinus montgomeryensis.

#### Batocrinus mundulus Hall.

1860. Actinocrinus mundulus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 39. Keokuk L. S.: Warsaw, Illinois.

1860. Actinocrinus similis. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 40. Keokuk L. S.: Warsaw, Illinois.

1860. Actinocrinus clavigerus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 44. Keokuk L. S.: Nauvoo, Illinois.

1897. Batocrinus mundulus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 382, pl. 30, figs. 4a-b, 5.

Keokuk Group: Keokuk, Iowa; Nauvoo, Illinois.

#### Batocrinus nanus Miller and Gurley.

1896. Batocrinus nanus. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 17, pl. 1, figs. 42-44.

Burlington Group: Sedalia, Missouri.

# Batocrinus nashvillæ. See Lobocrinus nashvillæ.

Batocrinus neglectus. See Eretmocrinus neglectus.

## Batocrinus niteus Miller and Gurley.

1896. Batocrinus niteus. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 15, pl. 1, figs. 30-32.

Burlington Group: Burlington, Iowa.

#### Batocrinus nitidulus Miller and Gurley.

1895. Batocrinus nitidulus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 17, pl. 1, figs. 12, 13.

Keokuk Group: Boonville, Missouri.

# Batocrinus nodosarius Miller and Gurley.

1896. Batocrinus nodosarius. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 22, pl. 1, figs. 11, 12.

Burlington Group: Adams County, Illinois.

## Batocrinus nodosus Miller and Gurley.

1996. Batorinus modesus. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 5, pl. 1, figs. 1-3.

Burlington Group: Adams County, Illinois.

#### Batocrinus nodulosus Miller and Gurley.

1896. Batecrinus modulosus. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 6, pl. 1, figs. 4-6.

Burlington Group: Adams County, Illinois.

#### Batocrinus oblatus. See Dizygocrinus rotundus.

## Batocrinus parilis Miller and Gurley.

1896. Batocrinus parilis. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 17, pl. 2, figs. 1, 2.

Keokuk Group: Boonville, Missouri.

## Batocrinus poculiaris Miller and Gurley.

1895. Batecrinus peculiaris. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 18, pl. 1, figs. 14-16.

Keokuk Group: Boonville, Missouri.

#### Batocrinus pettisensis Miller and Gurley.

1896. Batocrinus pettisensis. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 19, pl. 2, figs. 5, 6.
Burlington Group: Sedalia, Missouri.

# Batocrinus pileus Miller and Gurley.

1895. Batocrinue pileus. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 18, pl. 2, figs. 6-8.

St. Louis Group: Washington County, Indiana.

# Batocrinus pistilliformis. See Lobocrinus pyriformis.

## Batocrinus pistillus Meek and Worthen.

1865. Actinocrisus pistillus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 152. Burlington L. S.: Burlington, Iowa.

1868. Actinocrinus (Batecrinus) pistillus. Meek and Worthen, Geol. Surv. Ill., vol. 8, p. 472, pl. 16, figs. 4a, b.

Burlington Group: Burlington, Iowa.

1897. Batocrinus pistillus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 378, pl. 31, figs. 4a, b.

Upper Burlington L. S.: Burlington, Iowa.

#### Batocrinus planodiscus. See Eutrochecrinus planodiscus.

## Batocrinus planus Miller and Gurley.

1895. Batocrinus planus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 37, pl. 2, figs. 11-14.

Burlington Group: Sedalia, Missouri.

## Batocrinus poculum Miller and Gurley.

1890. Batocrinus poculum. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 352, pl. 6, figs. 6, 7.

Kinderhook Group: Legrand, Iowa.

1897. Batocrinus poculum. Wachsmuth and Springer, N. Am. Crin. Cam., p. 378, pl. 30, fig. 6.

Kinderhook Group: Legrand, Marshall County, Iowa.

#### Batocrinus politus Miller and Gurley.

1896. Batocrinus politus. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 31, pl. 1, figs. 23-25.

Burlington Group: Burlington, lowa.

# Batom nus polydactylus Miller and Gurley.

1895. Batorinus polydactylus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 5, pl. 1, fig. 1.

Keokuk Group: Boonville, Missouri.

## Batocrinus procerus Miller and Gurley.

1895. Batocrinus procerus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 33, pl. 1, figs. 40-42.

Keokuk Group: Boonville, Missouri.

#### Batocrinus prodigialis Miller and Gurley.

1895. Batocrinus prodigialis. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist, p. 39, pl. 3, figs. 4-6.

Keokuk Group: Button Mould Knob, Kentucky.

## Batocrinus proximus Miller and Gurley.

1896. Batocrinus proximus. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 7, pl. 1, figs. 4, 5.

Burlington Group: Sedalia, Missouri.

# Batocrinus pulchellus. See Dizygocrinus unionensis.

Batocrinus pyriformis. See Lobocrinus pyriformis.

#### Batocrinus quasillus Meek and Worthen.

1868. Batoorinus quasillus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 352.

Lower Burlington L. S.: Burlington, Iowa.

1873. Batocrinus quasillus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 369, pl. 5, fig. 2.

Burlington L. S.: Burlington, Iowa.

1897. Batocrinus quasillus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 372, pl. 28, figs. 4a, b.

Lower Burlington L. S.: Burlington, Iowa.

## Batocrinus regalis Miller and Gurley.

1896. Batocrinus regalis. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 14, pl. 1, figs. 22-24.

Burlington Group: Sedalia, Missouri.

## Batocrinus reliquus Miller and Gurley.

1897. Batocrinus reliquus. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 22, pl. 1, figs. 15-17.

Burlington Group: Near Sharon, Missouri.

#### Batocrinus remibrachiatus. See Eretmocrinus remibrachiatus.

#### Batocrinus remotus Miller and Gurley.

1896. Batocrinus remotus. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 43, pl. 2, figs. 15-17.

Burlington Group: Burlington, Iowa.

# Batocrinus repertus Miller and Gurley.

1896. Batocrinus repertus. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 70, pl. 4, figs. 28-30.

Burlington Group: Sedalia, Missouri.

#### Batocrinus repositus Miller and Gurley.

1896. Batocrinus repositus. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 45, pl. 2, figs. 18-20.
Burlington Group: Burlington, Iowa.

#### Batocrinus reservatus Miller and Gurley.

1897. Batocrinus reservatus. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 25, pl. 1, figs. 22-25.

Burlington Group: Near Sharon, Missouri.

#### Batocrinus rotadentatus Rowley and Hare.

1891. Batocrinus rotadentatus. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 102, pl. 2, figs. 17, 18.

Lower Burlington L. S.: Louisiana, Missouri.

1897. Batocrinus rotadentatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 374, pl. 46, fig. 7.

Lower Burlington L. S.: Louisiana, Missouri.

## Batocrinus rotuliformis Miller and Gurley.

1897. Batoorinus rotuliformis. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 26, pl. 1, figs. 26, 27; pl. 2, figs. 1, 2. Burlington Group: Near Sharon, Missouri.

Batocrinus rotundus. See Dizygocrinus rotundus.

# Batocrinus rudis Miller and Gurley.

1896. Batocrinus rudis. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 52, pl. 4, fig. 4.

Keokuk Group: Little Barren River, Kentucky.

## Batocrinus rusticellus Miller and Gurley.

1897. Batocrinus rusticellus. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 23, pl. 1, figs. 18-21.

Burlington Group: Near Sharon, Missouri.

#### Batocrinus rusticus Miller and Gurley.

1897. Batocrinus (1) rusticus. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 28, pl. 2, figs. 3-6.

Burlington Group: Near Sharon, Missouri.

## Batocrinus saccellus Miller and Gurley.

1896. Batocrinus saccellus. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 40, pl. 2, figs. 9-11.

Burlington Group: Burlington, Iowa.

## Batocrinus sacculus Miller and Gurley.

1894. Batorinus sacculus. Miller and Gurley, Bull. No. 5, Ill. State Mus. Nat. Hist., p. 52, pl. 5, figs. 7-9.

Warsaw Group: Washington County, Indiana.

#### Batocrinus sagetownensis Miller and Gurley.

1896. Batorinus sagetownensis. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 54, pl. 4, figs. 5-7.

Burlington Group: Sagetown, Illinois.

#### Batocrinus salemensis Miller and Gurley.

1896. Batocrinus salemensis. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 8, pl. 1, figs. 10-12.

Warsaw Group: Salem, Indiana.

# Batocrinus sampsoni Miller and Gurley.

1895. Batocrinus sampsoni. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 7, pl. 1, figs. 2, 3.

Keokuk Group: Boonville, Missouri.

#### Batocrinus scitulus Miller and Gurley.

1897. Batoorinus soitulus. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 19, pl. 1, figs. 10, 11.

Burlington Group: Near Sharon, Missouri.

Batocrinus scyphus. See Batocrinus laura.

#### Batocrinus sedaliensis Miller and Gurley.

1896. Batocrinus sedaliensis. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 71, pl. 4, figs. 31, 32.

Burlington Group: Sedalia, Missouri.

#### Batocrinus selectus Miller and Gurley.

1896. Batocrinus selectus. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 37, pl. 2, figs. 3-5.

Burlington Group: Sagetown, Illinois.

#### Batocrinus senex Miller and Gurley.

1897. Batocrinus senex. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 21, pl. 1, figs. 12-14.

Burlington Group: Near Sharon, Missouri.

## Batocrinus serratus Miller and Gurley.

1895. Batocrinus serratus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 27, pl. 1, figs. 28-30.

Keckuk Group: Boonville, Missouri.

## Batocrinus sharonensis Miller and Gurley.

1897. Batocrinus sharonensis. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 18, pl. 1, figs. 7-9. Burlington Group: Near Sharon, Missouri.

# Batocrinus shepardi Rowley.

1893. Batocrinus shepardi. Rowley, Am. Geol., vol. 12, p. 305, pl. 14, fig. 3. Burlington L. S.: Springfield, Missouri.

## Batocrinus signatus Miller and Gurley.

1896. Batocrinus signatus. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 10, pl. 1, figs. 16, 17. Keokuk Group: Keokuk, Iowa.

#### Batocrinus solitarius Miller and Gurley.

1896. Batocrinus solitarius. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 22, pl. 2, figs. 8-11.

Burlington Group: Adams County, Illinois.

# Batocrinus speciosus Miller and Gurley.

1896. Batocrinus speciosus. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 47, pl. 2, figs. 24-26.
Burlington Group: Burlington, Iowa.

#### Batocrinus spergenensis Miller.

1891. Batocrinus spergenensis. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 60, pl. 10, figs. 5, 6.

Warsaw Group: Spergen Hill, Indiana.

1892. Batocrinus sporgenensis. Miller, 17th Rep. Gool. Surv. Ind., p. 670, pl. 10, figs. 5, 6.

Warsaw Group: Spergen Hill, Indiana.

## Batocrinus spinosus Miller and Gurley.

1895. Batocrinus spinosus. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 5, pl. 1, figs. 1-3.
Keokuk Group: Little Barren River, Kentucky.

#### Batocrinus spurius Miller and Gurley.

1896. Bateorinus spurius. Miller and Gurley, Bull. No. 9, III. State Mus. Nat. Hist., p. 20, pl. 2, figs. 7-9.

Burlington Group: Burlington, Iowa.

#### Batocrinus stelliformis Miller and (Jurley.

1896. Batocrinus stelliformis. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 9, pl. 1, figs. 13-15.

Keokuk Group: Boonville, Missouri.

## Batocrinus steropes Hall.

1860. Actinocrimus steropes. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 43. Keokuk L. S.: Opposite Keokuk, Iowa, in Illinois.

## Batocrinus strenuus Miller and Gurley.

1896. Batoorinus strenuus. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 11, pl. 1, figs. 18, 19.

Keokuk Group: Boonville, Missouri.

# Batocrinus subsequatus Miller and Gurley.

1896. Batoorinus subaquatus. Miller and Gurley, Bull. No. 10, Ill. State Mus.Nat. Hist., p. 72, pl. 4, figs. 33-35.

Burlington Group: Sedalia, Missouri.

#### Batocrinus subsequalis McChesney.

1858. Actinocrinus discoideus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 594. (Crushed specimen.)
Burlington L. S.: Burlington, Iowa.

1860. Actinocrinus subsequalis. McChesney, Desc. New Pal. Foss., p. 17. Burlington L. S.: Monmouth, Illinois; Burlington, Iowa.

1860. Actinocrinus discotdeus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., pl. 2, fig. 9.

1860. Actinocrinus formosus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 30. Burlington L. S.: Burlington, Iowa.

1865. Actinocrimus subasqualis. McChesney, Ill. New. Spec. Foss., pl. 5, figs. 7a, b.

1868. Actinocrinus subacqualis. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 13, pl. 5, figs. 7a, b.

Burlington L. S.: Monmouth, Illinois; Burlington, Iowa.

1872. Actinocrinus formosus. Hall, Photo. Plates of Crinoids, pl. 3, fig. 1.

1893. Batocrinus discoideus. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 14, pl. 1, figs. 19, 20, p. 28, fig.

Burlington L. S.: Burlington, Iowa.

1894. Battorinus aquabilis. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 23, pl. 5, figs. 13-15.

Burlington Group: Sedalia, Missouri.

1897. Batocrinus subaqualis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 369, pl. 28, figs. 7a, b, 8a, b, 9.
Lower Burlington L. S.: Burlington, Iowa; Southern Missouri.

Batocrinus subconicus. See Dizygocrinus euconus.

## Batocrinus sublevis Miller and Gurley.

1896. Batocrinus sublavis. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 41, pl. 2, figs. 12-14.
 Burlington Group: Sagetown, Illinois.

# Batocrinus subovatus Miller and Gurley.

1896. Batocrinus suboratus. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 50, pl. 2, figs. 30, 31.
Burlington Group: Burlington, Iowa.

#### Batocrinus subrotundatus Hall.

1860. Actinocrinus subrotundatus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., pl. 2, fig. 4. (Diagram.)

## Betocrinus subrotundatus Miller and Gurley.

1896. Batorinus subrotundatus. Miller and Gurley, Bull. No. 10, Ill. State Mos. Nat. Hist., p. 48, pl. 2, figs. 27-29.
Burlington Group: Burlington, Iowa.

## Batocrinus subscitulus Miller and Gurley.

1896. Batocrinus subscitulus. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 51, pl. 3, figs. 9-11.

Burlington Group: Sedalia, Missouri.

. Batocrinus subtractus. See Lobocrinus nashvillæ var. subtractus.

Batocrinus sweeti. See Dizygocrinus montgomeryensis.

Batocrinus trochiscus. See Eutrochocrinus christyi var. trochiscus.

## Batocrinus tuberculatus Wachsmuth and Springer.

1897. Batocrinus tuberculatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 379, pl. 28, figs. 10a, b.
Lower Burlington L. S.: Burlington, Iowa.

#### Batocrinus turbinatus Hall.

1858. Actinocrinus turbinatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 587, pl. 11, fig. 1. Burlington L. S.: Burlington, Iowa.

1894. Batocrinus lactus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 24, pl. 5, figs. 10-12.
Burlington Group: Sedalia, Missouri.

1897. Batocrinus turbinatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 375, pl. 27, figs. 5a-c.

Lower Burlington L. S.: Louisiana, Missouri.

## Batocrinus turbinatus var. elegans Hall.

1858. Actinocrinus turbinatus var. elegans. Hall, Geol. Iowa, vol. 1, pt. 2, p. 588, pl. 11, fig. 5.

Burlington L. S.: Burlington, Iowa.

1894. Batocrinus elegans. Keyes, Mo. Geol. Surv., vol. 4, p. 180. Lower Burlington L. S.: Sedalia and Louisiana, Missouri.

1897. Batocrinus turbinatus var. elegans. Wachsmuth and Springer, N. Am. Crin. Cam., p. 376, pl. 27, figs. 6a, b. Lower Burlington L. S.: Louisiana, Missouri.

Batocrinus unionensis. See Dizygocrinus unionensis.

## Batocrinus variabilis Miller and Gurley.

1896. Batocrinus variabilis. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 58, pl. 4, figs. 13-17.
 Burlington Group: Iowa, Missouri, Illinois.

#### Batocrinus venustulus Miller and Gurley.

1895. Batocrinus venustulus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 12, pl. 1, fig. 7. Keokuk Group: Boonville, Missouri.

Batocrinus venustus. See Dizygocrinus euconus var. abscissus

Batocrinus verneuilianus. See Macrocrinus verneuilianus.

#### Batocrinus veterator Miller and Gurley.

1895. Batocrinus veterator. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 8, pl. 1, fig. 4.

Keokuk Group: Boonville, Missouri.

#### Batocrinus vetustus Miller and Gurley.

1895. Batocrinus vetustus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 10, pl. 1, figs. 5, 6. Keokuk Group: Boonville, Missouri.

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## Batocrinus vicinus Miller and Gurley.

1895. Batoorinus vicinus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 34, pl. 2, figs. 1-3. Keokuk Group: Boonville, Missouri.

## Batocrinus wetherbyi Miller and Gurley.

1895. Batocrinus wetherbyi. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 11, pl. 1, figs. 11, 12.

Keokuk Group: White Creek Springs, Tennessee.

#### Batocrinus whitei. See Dizygocrinus whitei.

#### Batocrinus (species undetermined.)

1896. Batorinus (an abnormal specimen). Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 64, pl. 4, figs. 24, 25.

Burlington Group: Burlington, Iowa.

1896. Batocrinus (an abnormal specimen). Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 66, pl. 4, figs. 26, 27.

Burlington Group: Burlington, Iowa.

## BATOSPONGIA Ulrich, 1890.

## Batospongia spicata Ulrich.

1890. Batosponga spicata. Ulrich, Geol. Surv. Ill., vol. 8, p. 246, pl. 6, figs. 2-2b. Base of Coal Measures: Seville, Illinois.

#### BATOSTOMELLA Ulrich, 1890.

#### Batostomella abrupta Ulrich.

1890. Batostomella abrupta. Ulrich, Geol. Surv. Ill., vol. 8, p. 435, pl. 75, figs. 2-2c. Chester Group: Sloan's Valley, Pulaski County, Kentucky.

#### Batostomella interstincta Ulrich.

1890. Batostomella interstincta. Ulrich, Geol. Surv. Ill., vol. 8, p. 434, pl. 75, figs. 4-4o.

St. Louis Group: Pella, Iowa.

#### Batostomella nitidula Ulrich.

■ 1890. Batostomella nitidula. Ulrich, Geol. Surv. Ill., vol. 8, p. 436, pl. 75, figs. 3-3b. Chester Group: Chester, Illinois; Sloan's Valley, Kentucky.

1894. Batostomella nitidula. Keyes, Mo., Geol. Surv., vol. 5, p. 14. Chester Shales: Chester, Illinois; Ste. Genevieve, Missouri.

#### Batostomella spinulosa Ulrich.

1890. Batostomella spinulosa. Ulrich, Geol. Surv. Ill., vol. 8, p. 434, pl. 75, figs. 1-1s.

Chester Group: Sloan's Valley, Pulaski County, Kentucky; Chester, Illinois.

#### BEECHERIA Hall, 1893.

### Beecheria davidsoni Hall and Clarke.

1894. Beecheria Davidsoni. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 53, figs. 1-3.

Carboniferous L. S.: Windsor, Nova Scotia.

1895. Beecheria Davidsoni. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 79, figs. 33-36.

Carboniferous L. S.: Windsor, Nova Scotia.

1897. Beecheria Davidsoni. Hall, 14th Rep. N. Y. State Geol., p. 372, pl. 14, figs. 7-11.

Carboniferous L. S.: Windsor, Nova Scotia.

## BELEMNOCRINUS White, 1862.

#### Belemnocrinus florifer Wachsmuth and Springer.

1877. Belemnocrinus florifer. Wachsmuth and Springer, Am. Jour. Sci. (3), vol. 13, p. 256.

Upper Burlington L. S.: Burlington, Iowa.

## Belemnocrinus portalesi Wachsmuth and Springer.

1877. Belemnocrinus Portalesi. Wachsmuth and Springer, Am. Jour. Sci. (3), vol. 13, p. 258.

Lower Burlington L. S.: Burlington, Iowa.

#### Belemnocrinus sampsoni Miller.

1891. Belemnocrinus Sampsoni. Miller, Bull. Geol. Surv. Mo., No. 4, p. 26, pl. 3, fig. 8.

Burlington Group: Sedalia, Missouri.

1894. Belemnocrinus? sampsoni. Keyes, Mo. Geol. Surv., vol. 4, p. 207, pl. 25, fig. 9. Lower Burlington L. S.: Sedalia, Missouri.

#### Belemnocrinus typus White.

1862. Belemnocrinus typus. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 14, figs. 1, 2, p. 13.

Upper Burlington L. S.: Burlington, Iowa.

#### Belemnocrinus whitii Meek and Worthen.

1866. Belemnocrinus Whitii. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 251.
Lower Burlington L. S.: Burlington, Iowa.

1868. Belemnoorinus Whitii. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 463, pl. 18, figs. 4a-c.

Burlington L. S.: Burlington, Iowa.

## BELEMNOSPONGIA Ulrich, 1890.

## Belemnospongia fascicularis Ulrich.

1890. Belemnospongia fascicularis. Ulrich, Geol. Surv. Ill., vol. 8, p. 248, pl. 3, figs. 2-2b.

Burlington L. S.: Burlington, Iowa; Montezuma, Illinois.

## BELINURUS Konig, 1825.

#### Belinurus danæ. See Prestwichia danæ.

## Belinurus lacoei Packard.

1885. Belinurus lacosi. Packard, Am. Nat., vol. 19, p. 292.

Carboniferous: Mazon Creek, Illinois.

1886. Belinurus lacoci. Packard, Mem. Nat. Acad. Sci., vol. 3, pt. 2, p. 149, pl. 5, fig. 5.

Carboniferous: Mazon Creek, Illinois.

1889. Belinurus laccei. Packard, Proc. Bost. Soc. Nat. Hist., vol. 24, p. 211.

Coal Measures: Mazon Creek, Illinois.

## BELLEROPHON Montfort, 1808.

#### Bellerophon alternodosus Whitfield.

1882. Bellerophon alternodosus. Whitfield, Ann. N. Y. Acad. Sci., vol. 2, p. 225. Maxville L. S.: Newtonville, Ohio.

1891. Bellerophon alternodosus. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 593, pl. 14, figs. 17-19.
Maxville L. S.: Newtonville, Ohio.

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1895. Bellerophon alternodosus. Whitfield, Geol. Surv. Ohio, vol. 7, p. 479, pl. 10, figs. 17-19.

Maxville L. S.: Newtonville, Ohio.

#### Bellerophon barquensis Winchell.

1862. Bellerophon Barquensis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 427.

Marshall Group: Pt. aux Barques, Michigan.

## Bellerophon bellus Keyes.

1894. Bellorophon bellus. Keyes, Mo. Geol. Surv., vol. 5, p. 148, pl. 50, fig. 7. Upper Coal Measures: Kansas City, Missouri.

### Bellerophon bilabiatus White and Whitfield.

- 1862. Bellerophon bilabiatus. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 304.
- Chemung Group: Burlington, Iowa.
- 1889. Bellerophon bilabiatus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 297. Kinderhook Group: Burlington, Iowa.
- 1894. Bellorophon bilabiatus. Keyes, Mo. Geol. Surv., vol. 5, p. 147, pl. 50, fig. 3. Kinderhook Group: Chouteau Springs, Missouri. Burlington L. S.: Louisiana, Missouri.

## Bellerophon blairi Miller and Gurley.

1896. Bellorophon blairi. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 21, pl. 3, figs. 7, 8.

Chouteau L. S.: Sedalia, Missouri.

Bellerophon blaneyanus McChesney. See Bellerophon carbonarius.

## Bellerophon branneri Weller.

1897. Bellerophon branneri. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 269, pl. 20, fig. 9.

Batesville S. S.: Batesville, Arkansas.

#### Bellerophon cancellatus Hall. See Bellerophon textilis.

#### Bellerophon carbonarius Cox.

- 1855. Bellerophon Urii. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 75, pl. 9, figs. 6a-c. (Not B. urii, Fleming, 1828.)
  Coal Measures: Galatia and Grayville, Illinois; and 5 miles below New Harmony, Indiana.
- 1857. Bellerophon carbonarius. Cox, Geol. Surv. Ky., vol. 3, p. 562. Coal Measures: Kentucky.
- 1860. Bellerephon vittatus. McChesney, Desc. New Pal. Foss., p. 59.
  Coal Messures: Mouth of Rush Creek, Indiana; Graysville, Illinois.
- 1860. Bellerophon blanyanus. McChesney, Desc. New Pal. Foss., p. 60.
  Coal Measures: Saline and Peoria counties, and Danville and Graysville,
  Illinois.
- 1865. Bellerophon blaneyanus. McChesney, Ill., New Spec. Foss., pl. 2, figs. 5a-c.
  1866. Bellerophon carbonarius. Geinitz, Carb. und Dyas in Nebr., p. 6, tab. 1, fig. 8.

Upper Carboniferous: Nebraska City, Nebraska.

- 1868. Bellerophon Blaneyanus. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 45, pl. 2, figs. 5a-c.
  - Coal Measures: Saline and Peoria counties, Illinois; Danville and Graysville. Illinois.
- 1872. Bellerophon carbonarius. Meek, U. S. Geol. Surv. Nebr., p. 224, pl. 4, fig. 16, pl. 11, figs. 11a-c.

Upper Coal Measures: Nebraska City, Nebraska.

Coal Measures: Iowa, Kansas, Missouri, Illinois, Kentucky, and Indiana. Lower Coal Measures: West Virginia.

1884. Bellerophon carbonarius. White, 13th Rep. Geol. Surv. Ind., p. 158, pl. 33, figs. 6-8.

Coal Measures: Indiana.

1887. Bellerophon carbonarius. Herrick, Bull. Den. Univ., vol. 2, p. 19, pl. 2, fig. 20.

Coal Measures: Flint Ridge, Ohio.

## Bellerophon carbonarius Cox—Continued.

- 1888. Bellerophon urii. Keyes, Proc. Acad. Nat. Sci. Phil., p. 235. Lower Coal Measures: Des Moines, Iowa.
- 1891. Bellerophon urii. Keyes, Proc. Acad. Nat. Sci. Phil., p. 255. Lower Coal Measures: Des Moines, Iowa.
- 1894. Bellerophon urii. Keyes, Mo. Geol. Surv., vol. 5, p. 149, pl. 50, figs. 5a-c. Upper Coal Measures: Kansas City. Mo.
- 1897. Bellerophon carbonarius. Smith, Proc. Am. Phil. Soc., vol. 35, p. 39. Lower Coal Measures: Conway County, Arkansas.

## Bellerophon carbonarius var. subpapillosus White. See Bellerophon subpapillosus.

## Bellerophon crassus Meek and Worthen.

- 1860. Bellerophon crassus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 458. Lower Coal Measures: Pittsburg, St. Clair County, Illinois.
- 1866. Bellerophon crassus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 385, pl. 31, figs. 16a, b.
  Lower Coal Measures: Pittsburg, St. Clair County, Illinois.
- 1877. Bellerophon crassus. White, U. S. Geol. Surv. W. 100 Merid., vol. 4, p. 157, pl. 12, fig. 1a.
  - Carboniferous: Camp Cottonwood, near Spring Mountain, Nevada.
- 1884. Bellerophon crassus. White, 18th Rep. Geol. Surv. Ind., p. 157, pl. 33, figs. 1, 2.
- Upper Coal Measures: Sullivan and Posey counties, Indians. 1886. Bellerophon crassus (var.) Heilprin, 2d Geol. Surv. Penn., Ann. Rep.
- 1886. Bellerophon crassus (var.) Hellprin, 2d Geol. Surv. Penn., Ann. Rep. 1885, p. 457.
  - Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.
- 1886. Bellerophon crassus (var.) Heilprin, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 277.
  - Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.
- 1887. Bellerophon (cf. crassus). Herrick, Bull. Den. Univ., vol. 2, p. 20, pl. 5, fig. 6.
  Coal Measures: Flint Ridge, Ohio.
- 1891. Bellerophon crassus. White, Bull. U. S. Geol. Surv., No. 77, p. 26.
  Permian: Military Crossing, Baylor County, Texas.
- 1894. Bellerophon crassus. Keyes, Mo. Geol. Surv., vol. 5, p. 151, pl. 50, figs. 1a, b. Upper Coal Measures: Kansas City and Lexington, Missouri.
- 1897. Bellerophon crassus. Smith, Proc. Am. Phil. Soc., vol. 35, p. 39. Lower Coal Measures: Conway County, Arkansas.

## Bellerophon cyrtolites Hall.

- 1860. Bellerophon cyrtolites. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 107. Goniatite L. S.: Rockford, Indiana.
- 1862. Bellerophon cyrtolites. Winchell, Proc. Acad. Nat. Sci. Phil., p. 426. Marshall Group: Moscow, Michigan.
- 1863. Bellerophon cyrtolites. Winchell, Proc. Acad. Nat. Sci. Phil., p. 18.
  Yellow S. S.: Burlington, Iowa.
- 1865. Bellerophon cyrtolites. Winchell, Proc. Acad. Nat. Sci. Phil., p. 131.
  Marshall Group: Hillsdale, Michigan.
- 1866. Bellerophon cyrtolites. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 160, pl. 14, figs. 8a, b. Goniatite Bed: Rockford, Indiana.
- 1870. Bellerophon cyrtolites. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 257. Waverly Group: Granville, Ohio.
- 1888. Bellerophon cyrtolites. Herrick, Bull. Den. Univ., vol. 3, p. 88, pl. 2, figs. 27, 29; pl. 8, figs. 20, 21; pl. 9, figs. 29, 31.
  Waverly Group: Licking County, Ohio.

## Bellerophon decussatus Herrick.

1887. Bellerophon decussatus?? Herrick, Bull. Den. Univ., vol. 2, p. 19, pl. 2, fig. 12. Coal Measures: Flint Ridge, Ohio.

#### Bellerophon ellipticus McChesney.

186C. Bellerophon ellipticus. McChesney, Desc. New Pal. Foss., p. 58.
Coal Measures: Dr. E. Hall's Mill, Pope Creek, Knox County; Carnahan's
Mine, Mercer County, and Mr. Fisher's Mine, near Lacon, Illinois.

1865. Bellerophon ellipticus. McChesney, Ill., New Spec. Foss., pl. 3, figs. 1-2.

1868. Bellerophon elliptions. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 44, pl. 3, figs. 1, 2.

Coal Measures: Knox County, Mercer County, and Lacon, Illinois.

#### Bellerophon galericulatus Winchell.

1862. Belleropkon galericulatus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 426.

Marshall Group: Marshall, Battle Creek, etc., Michigan.

1888. Bellerophon galericulatus. Herrick, Bull. Den. Univ., vol. 3, p. 89, pl. 2, fig. 34; pl. 9, fig. 32.
Waverly Group: Licking County, Ohio.

#### Bellerophon gibsoni White.

1882. Bellerophon gibsoni. White, 11th Ahn, Rep. Geol. Surv. Ind., p. 360, pl. 41, figs. 4-6.

St. Louis Group: Greencastle, Indiana.

## Bellerophon giganteus Worthen.

1884. Bellerophon giganteus. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 8.
Lower Coal Measures: Monroe County, Illinois.

1890. Bellerophon giganteus. Worthen, Geol. Surv. Ill., vol. 8, p. 143, pl. 25, figs. 5, 5a.

Lower Coal Measures: Monroe County, Illinois.

#### Bellerophon globosus Stevens.

1858. Bellerophon globosa. Stevens, Am. Jour. Sci. (2), vol. 25, p. 258. Coal Measures: Lasalle, Illinois.

#### Bellerophon harrodi Gurley.

1883. Bellerophon Harrodi. Gurley, New Carb. Foss. Bull. No. 1, p. 5.
Upper Coal Measures: Near Oakwood, Vermilion County, Illinois.

#### Bellerophon helena Hall.

1879. Bellerophon Helena. Hall, Pal. N. Y., vol. 5, pt. 2, p. 114, pl. 24, fig. 11. Hamilton Group: Cayuga and Canandaigua lakes, New York.

1888. Bellerophon helena ? Herrick, Bull. Den. Univ., vol. 4, pl. 9, fig. 11. Bedford Shale: Central College, Ohio.

1889. Bellerophon newberryi. Am. Geol., vol. 3, pl. 4, fig. 11. Bedford Shale: Ohio.

1895. Bellerophon helena. Herrick, Geol. Surv. Ohio, vol. 7, pl. 20, fig. 11. Shale above Berea Grit: Ohio.

#### Bellerophon hiuleus Owen.

1852. Bellerophon hiuleus? Owen, Geol. Rep. Wis., Iowa, and Minn., tab. 5, fig. 8.

Lower Carboniferous L. S.: Keokuk rapids of Mississippi River.

## Bellerophon imcomptus Gurley.

1884. Bellerophon imcomptus. Gurley, New Carb. Foss. Bull. No. 2, p. 9
Coal Measures: Danville, Illinois.

#### Bellerophon inspeciosus White.

1881. Bellerophon inspectosus. White, U. S. Geog. Surv. W. 100 Merid., vol. 3, Supp. Appendix, p. xxx, pl. 4, figs. 1a-d.
Carboniferous: Near Taos and at Taos Peak, New Mexico.

#### Bellerophon panneus White.

- 1862. Bellerophon panneus. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 21. Chemung Group: Burlington, Iowa.
- 1889. Bellerophon panneus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 297. Kinderhook Group: Burlington, Iowa.
- 1894. Bellerophon panneus. Keyes, Mo. Geol. Surv., vol. 5, p. 147, pl. 50, fig. 6. Kinderhook Group: Burlington, Iowa.

## Bellerophon percarinatus Conrad.

\*1842. Bellerophon percarinatus. Conrad, Jour. Acad. Nat. Sci. Phil. (1), vol. 8, p. 268.

Coal Measures.

1855. Bellerophon percarinatus. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 74, pl. 9, figs. 4a-c.

Coal Measures: Grayville, Illinois; Posey County, Indiana, 5 miles below New Harmony.

1872. Bellerophon percarinatus. Meek, U. S. Geol. Surv. Nebr., p. 227, pl. 11, fig. 14.
Upper Coal Measures: Nebraska City and Brownville, Nebraska; Grayville, Illinois, Illinois, Iowa, Missouri.

Lower Coal Measures: West Virginia.

1884. Bellerophon percarinatus. White, 13th Rep. Geol. Surv. Ind., p. 158, pl. 33, figs. 9-14.
Coal Messures: Indiana.

1886. Bellerophon percarinatus. Claypole, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 246.
Lower Coal Measures: Wilkesbarre, Pennsylvania.

1887. Bellerophon percarinatus. Herrick, Bull. Den. Univ., vol. 2, p. 17, pl. 2, fig. 14. Coal Measures: Flint Ridge, Ohio.

1888. Bellerophon percarinatus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 234. Lower Coal Measures: Des Moines, Iowa.

1894. Bellerophon percarinatus. Keyes, Mo. Geol. Surv., vol. 5, p. 153, pl. 50, figs. 2a-f.
Upper Coal Measures: Kansas City, Missouri.

## Bellerophon perelegans White and Whitfield.

1862. Bellerophon perelogans. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 304.
Chemung Group: Burlington, Iowa.

1888. Bellerophon perelegans? Herrick, Bull. Den. Univ., vol. 3, p. 90, pl. 9, fig. 30. Waverly Group: Licking County, Ohio.

#### Bellerophon perlatus Conrad.

\*1842. Bellerophon perlatus. Conrad, Jour. Acad. Nat. Sci. Phil. (1), vol. 8, p. 270. Carboniferous: Inclined plane of Allegany Mountains.

## Bellerophon rugopleurus Gurley.

1884. Bellerophon rugopleurus. Gurley, New Carb. Foss. Bull. No. 2, p. 11. Upper Coal Measures: Near Oakwood, Vermilion County, Illinois.

#### Bellerophon rugosiusculus Winchell.

1862. Bellerophon rugosiusculus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 425. Marshall Group: Marshall, Michigan.

## Bellerophon rugosiusculus var. tæniatus Winchell.

1862. Bellerophon rugosiusculus var. taniatus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 425.

Marshall Group: Moscow, Michigan.

## Bellerophon scriptiferus White.

1862. Bellerophon scriptiferus. White, Proc. Bost, Soc. Nat. Hist., vol. 9, p. 21.
Chemung Group: Burlington, lowa.

## Bellerophon scissile Conrad.

1844. Bellerophon scissile. Conrad, Proc. Acad. Nat. Sci. Phil., p. 175. St. Genevieve.

#### Bellerophon sedaliensis Miller and Gurley.

1896. Bellerophon sedaliensis. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 21, pl. 3, figs. 9, 10.
Chouteau L. S.: Near Sedalia, Missouri.

#### Bellerophon stamineus Conrad.

\*1842. Bellerophon stamineus. Conrad, Jour. Acad. Nat. Sci. Phil. (1), vol. 8, p. 269.

Marshall Group.

#### Bellerophon stevensanus McChesney.

1860. Bellerophon stevensianus. McChesney, Desc. New Pal. Foss., p. 61. Coal Measures: Springfield, Illinois.

1865. Bellerophon stevensianus. McChesney, Ill. New Spec. Foss., pl. 2, figs. 18a-c.

1868. Bellerophon Stevensianus. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 46-pl. 2, figs. 18a-c.

Coal Measures: Springfield, Illinois.

1894. Bellerophon stevensianus. Keyes, Mo. Geol. Surv., vol. 5, p. 152. Upper Coal Measures: Kansas City, Missouri.

#### Bellerophon subcordiformis Herrick.

1887. Bellerophon subcordiformis. Herrick, Bull. Den. Univ., vol. 2, p. 18, pl. 2, figs. 7a-c.
Coal Measures: Flint Ridge, Ohio.

#### Bellerophon sublævis Hall.

1856. Bellerophon sublavis. Hall, Trans. Albany Inst., vol. 4, p. 32.
St. Louis L. S: Spergen Hill and Bloomington, Indiana; Alton, Illinois.

1858. Bellerophon sublavis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 666, pl. 23, figs. 15a-c. Warsaw L. S.: Above Alton, Illinois; Spergen Hill and Bloomington, Indiana.

1882. Bellerophon sublavis. White, 11th Rep. Geol. Surv. Ind., p. 359, pl. 40, figs. 5-7.

St. Louis Group: Elletsville, Monroe County, Indiana.

1882. Bellerophon sublævis. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 89, pl. 8, figs. 6-7.

St. Louis Group: Spergen Hill, Bloomington, Payners Hill, and Ellets-ville, Indiana; Alton, Illinois.

1883. Bellerophon sublævis. Hall, 12th Rep. Geol. Surv. Ind., p. 371, pl. 31, figs. 6-7.

St. Louis Group: Alton, Illinois; Spergen Hill, Lanesville, and Bloomington, Indiana.

1886. Bellerophon sublavis. Claypole, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 246.

Lower Coal Measures: Wilkesbarre, Pennsylvania.

1891. Bellerophon sublaevis? Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 592, pl. 14, figs. 20, 21.

Maxville L. S.: Newtonville and Maxville, Ohio.

1894. Bellerophon sublævis. Keyes, Mo. Geol. Surv., vol. 5, p. 148. St. Louis L. S.: St. Louis, Missouri.

1895. Bellerophon sublevis? Whitfield, Geol. Surv. Ohio, vol. 7, p. 479, pl. 10, figs. 20, 21.

Maxville L. S.: Newtonville and Maxville, Ohio.

1897. Bellerophon sublasris. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 269, pl. 20-fig. 10.

Batesville S. S.: Batesville, Arkansas.

Bull. 153----10

## Bellerophon subpapillosus White.

1876. Bellerophon carbonarius var. subpapillosus. White, Powell's Rep. Geol. Uinta Mts., p. 92.

Upper Aubrey Group: Beehive Point, near Echo Canyon, and near Echo Park, Utah.

1879. Bellerophon subpapillosus. White, Bull. U. S. Geol. and Geog. Surv. Terr., vol. 5, p. 218.

Carboniferous: Wild Band Pockets, Northern Arizona, 15 miles south of Pipe Spring.

1880. Bellerophon subpapillosus. White, Cont. to Iuv. Pal., No. 6, p. 138, pl. 34, fig. 3a.

Upper Carboniferous: Northwestern Colorado and Northern Arizona.

## Bellerophon tenuilineatus Gurley.

1884. Bellerophon tenuilineatus. Gurley, New Carb. Foss. Bull. No. 2, p. 10.
Upper Coal Measures: Near Oakwood, Vermilion County, Illinois.

#### Bellerophon textiliformis Gurley.

1883. Bellerophon taxtiliformis. Gurley, New Carb. Foss. Bull. No. 1, p. 6. Upper Coal Measures: Kansas City, Missouri.

#### Bellerophon textilis Hall.

1856. Bellerophon cancellatus. Hall, Trans. Albany Inst., vol. 4, p. 31. (Not B. cancellatus Hall, 1847.)

St. Louis L. S.: Bloomington and Spergen Hill, Indiana.

1877. Bellerophon textilis. Hall, Miller's Am. Pal. Foss., p. 243.

1882. Bellerophon textilis. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 90, pl. 8, figs. 4, 5.

St. Louis Group: Spergen Hill and Bloomington, Indiana.

1883. Bellerophon textilis. Hall, 12th Rep. Geol. Surv. Ind., p. 371, pl. 31, figs. 4, 5. St. Louis Group: Spergen Hill, Lanesville and Bloomington, Indiana.

1884. Bellerophon textilie! Walcott, Pal. Eureka Dist., p. 257, pl. 18, fig. 18. Lower Carboniferous: Eureka District, Nevada.

#### Bellerophon tricarinatus Shumard.

1858. Bellerophon tricarinatus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 204.

Upper Coal Measures: Kansas.

# Bellerophon urii Norwood and Pratten. See Bellerophon carbonarius. Bellerophon vinculatus White and Whitfield.

1862. Bellerophon rinculatus. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 304.

Chemung Group: Burlington, Iowa.

## Bellerophon vittatus McChesney. See Bellerophon carbonarius.

#### Bellerophon whittleseyi Winchell.

1865. Bellerophon Whittleseyi. Winchell, Proc. Acad. Nat. Sci. Phil., p. 130.

Marshall Group: One mile east of Orange Center, Cuyahoga County, Ohio.

## Bellerophon (species undetermined).

1859. Bellerophon, sp. (†) Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 399.

Dark Permian L. S.: Guadalupe Mountains.

1861. Bellerophon. Newberry, Ives', Colo. Expl. Exped., p. 118. Carboniferous: Agua Azul, near base of Mcunt Taylor.

1868. Bellerophon. Dawson, Acad. Geol., p. 308. Carboniferous L. S.: Kennetcook, Nova Scotia.

1873. Bellerophon (sp. undet.). Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 23, fig. 2.

St. Louis Group.

## Bellerophon (species undetermined)—Continued.

1876. Bellerophon —— (?) ——. White, Powell's Rep. Geol. Uinta Mts., p. 91.

Lower Aubrey Group: Confluence of Grand and Green rivers, Utah.

1888. Bellerophon sp ? Herrick, Bull. Den. Univ., vol. 3, p. 90, pl. 12, fig. 36. Waverly Group: Licking County, Ohio.

1888. Bellerophon sp. Herrick, Bull. Den. Univ., vol. 3, pl. 2, fig. 30. Waverly Group: Licking County, Ohio.

1888. Bellerophon sp f Herrick, Bull. Den. Univ., vol. 3, pl. 8, fig. 22. Waverly Group: Licking County, Ohio.

1891. Bellerophon —— ? White, Bull. U. S. Geol. Surv., No. 77, p. 26. Permian: Military Crossing, Baylor County, Texas.

1897. Bellerophon sp. Smith, Proc. Am. Phil. Soc., vol. 35, p. 39.
Lower Coal Measures: White County, Arkansae.

## BERENICEA Lamoureax, 1821.

#### Berenicea insueta Dawson.

1883. Berenices insuets. Dawson, Rep. Peter Redpath Mus., No. 2, p. 12. Lower Carboniferous L. S.: Windsor, Nova Scotia.

#### Berenicea (species undetermined).

1868. Berenices, two species. Dawson, Acad. Geol., p. 289. Carboniferous L. S.: Windsor, Nova Scotia.

#### BEYRICHIA McCoy, 1844.

#### Beyrichia feetoidea White and St. John.

1868. Beyrichia fostoides. White and St. John, Trans. Chicago Acad. Sci., vol. 1, p. 126, figs. 11a, b.

Upper Coal Measures: Union and Page counties, Illinois.

#### Beyrichia ionesii Dawson.

1868. Beyrichia Jonesii. Dawson, Acad. Geol., p. 312, fig. 132. Carboniferous L. S.: Windsor, Nova Scotia.

#### Beyrichia lithofactor White and St. John.

\*1867. Beyrichia lithofactor. White and St. John, Prelim. Not. New Gen. and Spec. Foss., p. 2.

St. Louis L. S.: Pella, Iowa.

1868. Beyrichia petrifactor. White and St. John, Trans. Chicago Acad. Sci., vol. 1, p. 125.

St. Louis L. S.: Pella, Iowa.

#### Beyrichia lithofactor var. velata White and St. John.

1867. Beyrichia Uthofactor var. velata. White and St. John, Prelim. Not. New Gen. and Spec. Foss., p. 2.

St. Louis L. S.: Pella, Iowa.

1868. Beyrickia petrifactor var. velata. White and St. John, Trans. Chicago Acad. Sci., vol. 1, p. 126.

St. Louis L. S.: Pella, Iowa.

#### Beyrichia novascotica Jones and Kirkby.

1868. Beyrichia sp. Dawson Acad. Geol., p 256, fig. 78c. Carboniferous: Horton Bluff, Nova Scotia.

1884. Boyrichia Nova-scotica. Jones and Kirkby, Geol. Mag. (3), vol. 1, p. 358, pl. 12, figs. 5, 6.

#### Beyrichia petrifactor White and St. John. See Beyrichia lithofactor.

Beyrichia petrifactor var. velata White and St. John. See Beyrichia lithofactor var. velata.

#### Beyrichia radiata var. cestriensis Ulrich.

1891. Beyrichia radiata var. cestriensis. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 204, pl. 14, figs. 4a, b.

Chester Group: Grayson Springs, Kentucky.

#### Boyrichia simulatrix Ulrich.

1891. Beyrichia simulatrix. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 205, pl. 18, figs. 7a, b.

Chester Group: Grayson Springs, Kentucky.

#### Beyrichia or Primitia, sp. Jones and Kirkby.

1884. Beyrichia or Primitia? sp. Jones and Kirkby, Geol. Mag. (3), vol. 1, p. 358, pl. 12, fig. 7.

Lower Coal Measures: Horton, Nova Scotia.

## BIOPALLA Wallace, 1878.

## Biopalla alicei Wallace.

1878. Biopalla Alicei. Wallace, Am. Jour. Sci. (3), vol. 15, p. 370. Keokuk L. S. (Geode Bed): Keokuk, Iowa.

## Biopalla grandis Wallace.

1878. Biopalla grandis. Wallace, Am. Jour. Sci. (3), vol. 15, p. 369.
Keokuk L. S. (Geode Bed): Keokuk, Iowa; Clark County, Missouri.

## Biopalla hæckeli Wallace.

1878. Biopalla Hæckeli. Wallace, Am. Jour. Sci. (3), vol. 15, p. 370. Keokuk L. S. (Geode Bed): Keokuk, Iowa; Canton, Missouri.

## Biopalla hyatti Wallace.

1878. Biopalla Hyatti. Wallace, Am. Jour. Sci. (3), vol. 15, p. 370. Keokuk L. S. (Geode Bed): Keokuk, Iowa; Hamilton, Illinois.

#### Biopalla keokuk Wallace.

1878. Biopalla Keokuk. Wallace, Am. Jour. Sci. (3), vol. 15, p. 369.
Keokuk L. S. (Geode Bed): Keokuk, Iowa; Hamilton, Illinois.

#### Biopalla palmata Wallace.

1878. Biopalla palmata. Wallace, Am. Jour. Sci. (3), vol. 15, p. 370. Keokuk L. S. (Geode Bed): Keokuk, Iowa.

#### Biopalla woodmani Wallace.

1878. Biopalla Woodmani. Wallace, Am. Jour. Sci. (3), vol. 15, p. 369. Keokuk L. S. (Geode Bed): Keokuk, Iowa.

#### Biopalla wortheni Wallace.

1878. Biopalla Wortheni. Wallace, Am. Jour. Sci. (3), vol. 15, p. 369. Keokuk L. S. (Geode Bed): Hamilton, Illinois.

#### BLAIRELLA Miller and Gurley, 1896.

## Blairella sedaliensis Miller and Gurley.

1896. Blairella sedaliensis. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 7, pl. 1, figs. 4-8. Chouteau L. S.: Near Sedalia, Missouri.

BLAIROCRINUS Miller, 1891.

Blairocrinus arrosus. See Actinocrinus arrosus.

Blairocrinus bullatus. See Actinocrinus arrosus.

## Blairocrinus spinulosus Miller and Gurley.

1894. Blairocrinus spinulosus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 28, pl. 7, figs. 16-18.

Chouteau L. S.: Sedalia, Missouri.

Blairocrinus trijugis. See Actinocrinus trijugis.

## (BLATTINA Burmeister, 1838.)

Blattina bretonensis Scudder. See Mylacris bretonensis.

Blattina fascigera Scudder. See Gerablattina fascigera.

Blattina heeri Scudder. See Mylacris heeri.

Blattina sepulta Scudder. See Petrablattina sepulta.

Blattina venusta Lesquereux. See Etoblattina venusta.

#### Blattina sp. Scudder.

1895. Blattina sp. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 142, pl. 10, fig. 16. Lower Coal Measures: Mazon Creek, Illinois.

#### BOLLIA Jones and Hall, 1886.

## Bollia granifera Ulrich.

1891. Bollia granifera. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 205, pl. 12. figs. 12a, b.

St. Louis L. S.: Elizabethtown, Kentucky.

#### BRACHYMETOPUS McCoy, 1847.

#### Brashymetopus armatus Vogdes.

1891. Brachymetopus armatus. Vogdes, Trans. St. Louis Acad. Sci., vol. 5, p. 617, pl. 15, figs. 4, 5.

Waverly Group: Sedalia, Missouri.

#### Brachymetopus immaturus Herrick.

1888. Phaethonides ? immaturus. Herrick, Bull. Den. Univ., vol. 4, p. 59, pl. 1. figs. 9, 15.

Waverly Group: Newark and Cuyahoga Falls, Ohio.

1889. Phathonides immaturus. Herrick, Am. Geol., vol. 3, pl. 1, figs. 9, 15.

1894. Phillipsia? immaturus. Keyes, Mo. Geol. Surv., vol. 4, p. 238. Lower Burlington L. S.: Louisiana, Missouri.

1895. Phæthonides immaturus. Herrick, Geol. Surv. Ohio, vol. 7, pl. 14, fig. 9. Cuyahoga Shale: Cuyahoga Falls, Ohio.

## Brachymetopus lodiensis Meek.

1875. Phillipsia (Griffithides?) Lodiensis. Meek, Pal. Ohio, vol. 2, p. 323, pl. 18, fig. 3. Cuyahoga Shale: Lodi and Loudonville, Ohio.

1887. Brachymetopeus lodiensis. Herrick, Bull. Den. Univ., vol. 2, pl. 3, fig. 4. 1887. Brachymetopeus lodiensis. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 102. Cuyahoga Shale: Lodi, Medina County, Ohio. Waverly Group: Londonville, Ohio.

1888. Phæthonides (?) lodiensis. Herrick, Bull. Den. Univ., vol. 4, p. 59. Waverly Group: Ohio.

#### Brachymetopus occidentalis Herrick.

1888. Phaethonides occidentalis. Herrick, Bull. Den. Univ., vol. 4, p. 57, pl. 1, figs. 10a, b.

Waverly Group: Granville and Newark, Ohio.

#### Brachymetopus occidentalis Herrick—Continued.

- 1889. Phæthonides occidentalis. Herrick, Am. Geol. vol. 3, pl. 1, fig. 10.
- 1895. Phæthonides occidentalis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 14, figs. 10, 11. Waverly Group (Conglomerate I): Granville, Ohio.

#### Brachymetopus spinosus Herrick.

- 1888. Phaethonides spinosus. Herrick, Bull. Den. Univ., vol. 4, p. 58, pl. 1, figs. 4, 5. Waverly Group: Licking and Ashland counties, Ohio.
- 1889. Phæthonides spinosus. Herrick, Am. Geol., vol. 3, pl. 1, figs. 4, 5.
- 1891. Phaëthonides spinosus. Herrick, Bull. Geol. Soc. Am., vol. 2, p. 42, pl. 1, fig. 13. Cuyahoga Shale: Scioto County, Ohio.
- 1895. Phathonides spinosus. Herrick, Geol. Surv. Ohio, vol. 7, pl. 14, figs. 4,5 (16b, c)?

Cuyahoga Shale: Licking and Ashland counties, Ohio.

## BRANCOCERAS Hyatt, 1883.

#### Brancoceras ixion Hall.

- 1860. Goniatites rotatorius?. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 101, figs. 15-16.
  - Goniatite L. S.: Rockford, Indiana.
- 1860. Goniatites ixion. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 125, figs. 1, 2. Goniatite L. S.: Rockford, Indiana.
- 1879. Goniatites ixion. Hall, Pal. N. Y., vol. 5, pt. 2, p. 474, pl. 73, figs. 12-14; pl. 74, fig. 12.
  - Goniatite L. S.: Rockford, Indiana.
- 1883. Brancoceras Ixion. Hyatt, Proc. Bost. Soc. Nat. Hist., vol. 22, p. 326.
- 1886. Goniatites Izion. Hall, 5th Ann. Rep. N. Y. State Geol., pl. (128) 13, fig. 3. Goniatite L. S.: Rockford, Indiana.
- 1888. Goniatites Ixion. Beecher, Pal. N. Y., vol. 5, pt. 2, Supp., p. 40, pl. 128, fig. 3. Goniatite L. S.: Rockford, Indiana.
- . 1897. Brancoceras Ixion. Foord and Crick, Cat. Foss. Ceph., pt. 3, p. 141, fig. 62, p. 132.

Goniatite Limestone, Kinderhook Group: Rockford, Indiana.

#### (BULIMELLA Hall, 1858.)

Bulimella bulimiformis Hall. See Bulimorpha bulimiformis. Bulimella canaliculata Hall. See Bulimorpha canaliculata. Bulimella elongata Hall. See Bulimorpha elongata.

## BULIMORPHA Whitfield, 1882.

## Bulimorpha bulimiformis Hall.

- 1856. Bulimella bulimiformis. Hall, Trans. Albany Inst., vol. 4, p. 29.
  St. Louis L. S.: Spergen Hill and Bloomington, Indiana.
- 1882. Bulimorpha bulimiformis. Whitfield. Bull. Am. Mus. Nat. Hist., vol. 1, p. 74, pl. 8, figs. 37-39.
  - St. Louis Group: Spergen Hill and Bloomington, Indiana.
- 1883. Bulimorpha bulimiformis. Hall, 12th Rep. Geol. Surv. Ind., p. 366, pl. 31, figs. 37-39.
  - St. Louis Group: Spergen Hill, Lanesville, and Bloomington, Indiana.
- 1889. Bulimorpha bulimiformis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 300.
- 1894. Bulimorpha bulimiformis. Keyes, Mo. Geol. Surv., vol. 5, p. 204. St. Louis L. S.: St. Louis, Missouri.

## Bulimorpha canaliculata Hall.

- 1856. Bulimella canaliculata. Hall, Trans. Albany Inst., vol. 4, p. 29. St. Louis L. S.: Spergen Hill, Indiana.
- 1882. Bulimorpha canaliculata. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 74, pl. 8, fig. 41.

St. Louis Group: Spergen Hill, Indiana.

- 1883. Bulimorpha canaliculata. Hall, 12th Rep. Geol. Surv. Ind., p. 367, pl. 31, fig. 41.
  - St. Louis Group: Spergen Hill and Lanesville, Indiana.
- 1889. Bulimorpha canaliculata. Keyes, Proc. Acad. Nat. Sci. Phil., p. 300.

### Bulimorpha chrysalis Meek and Worthen.

- 1866. Polyphemopeis chrysallis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 287.
  - Lower Coal Measures: Hodge's Creek, Macoupin County, Illinois.
- 1873. Polyphemopsis chrysallis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 596, pl. 28, fig. 7.
  - Coal Measures: Hodge's Creek, Macoupin County, Illinois.
- 1889. Bulimorpha chrysalis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 300.
- 1891. Bulimorpha f chrysalis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 264.
  Lower Coal Measures: Des Moines, Iowa.

## Bulimorpha elongata Hall.

- 1856. Bulimella elongata. Hall, Trans. Albany Inst., vol. 4, p. 30.
  St. Louis L. S.: Spergen Hill, Indiana.
- 1882. Bulimorpha elongata. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 75, pl. 8, fig. 40.
- St. Louis Group: Spergen Hill, Indiana.
- 1883. Bulimorpha elongata. Hall, 12th Rep. Geol. Surv. Ind., p. 368, pl. 31, fig. 40.
  St. Louis Group: Spergen Hill and Lanesville, Indiana.
- 1889. Bulimorpha elongata. Keyes, Proc. Acad. Nat. Sci. Phil., p. 301.

#### Bulimorpha inornata Meek and Worthen.

- 1860. Lozonema inornàta. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 465. Upper Coal Measures: Springfield, Illinois.
- 1866. Polyphemopsis inormata. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 374, pl. 31, figs. 8a-c.
  Upper Coal Measures: Springfield, Illinois.
- 1887. Polyphomopeis inormata. Herrick, Bull. Den. Univ., vol. 2, p. 20, pl. 2, fig. 15.
  Coal Measures: Flint Ridge, Ohio.
- 1889. Bulimorpha inornata. Keyes, Proc. Acad. Nat. Sci. Phil., p. 301.
- 1894. Bulimorpha inornata. Keyes, Mo. Geol. Surv., vol. 5, p. 205, pl. 55, fig. 6. Upper Coal Measures: Kansas City, Missouri.
- 1897. Polyphemopsis inornata. Smith, Proc. Am. Phil. Soc., vol. 35, p. 41. Upper Coal Measures: Crawford County, Arkansas.

#### Bulimorpha! keokuk Worthen.

- 1884. Polyphemopeis? keokuk. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 9. Lower Keokuk L. S.: Keokuk, Iowa.
- 1889. Polyphemopsis keokuk. Keyes, Proc. Acad. Nat. Sci. Phil., p. 301.
- 1890. Polyphemopsis? kookuk. Worthen, Geol. Surv. Ill., vol. 8, p. 144, pl. 23, fig. 3. Keokuk L. S.: Keokuk, Iowa.

## Bulimorpha melanoides Whitfield.

- 1882. Polyphomopsis melanoides. Whitfield, Ann. N. Y. Acad. Sci., vol. 2, p. 225.

  Maxville L. S.: Newtonville, Ohio.
- 1891. Polyphomopsis melanoides. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 592, pl. 14, fig. 13.
  Maxville L. S.: Newtonville, Ohio.

#### Bulimorpha melanoides Whitfield—Continued.

1895. Polyphemopsis melanoides. Whitfield, Geol. Surv. Ohio, vol. 7, p. 478, pl. 10, fig. 13.

Maxville L. S.: Newtonville, Ohio.

## Bulimorpha minuta Stevens.

1858. Loxonema minuta. Stevens, Am. Jour. Sci. (2), vol. 25, p. 260. Coal Measures: Sangamon County and Danville, Illinois.

1873. Actaonina minuta. Meck and Worthen, Geol. Surv. Ill., vol. 5, p. 594, pl. 29, fig. 2.

Coal Measures: Danville, Illinois.

1888. Actaonia minuta. Keyes, Proc. Acad. Nat. Sci. Phil., p. 240. Lower Coal Measures: Des Moines, Iowa.

1889. Bulimorpha minuta. Keyes, Proc. Acad. Nat. Sci. Phil., p. 301. 1891. Bulimorpha minuta. Keyes, Proc. Acad. Nat. Sci. Phil., p. 263.

1891. Bulimorpha minuta. Keyes, Proc. Acad. Nat. Sci. Phil., p. 263 Lower Coal Measures: Des Moines, Iowa.

#### Bulimorpha nitidula Meek and Worthen.

1860. Loronema nitidula. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 465. Upper Coal Measures: Springfield, Illinois.

1866. Polyphemopsis nitidula. Meck and Worthen, Geol. Surv. Ill., vol. 2, p. 374, pl. 31, figs. 9a, b.

Upper Coal Measures: Springfield, Illinois.

1882. Polyphemopsis mitidula. White, 11th Rep. Geol. Surv. Ind., p. 370, pl. 42, figs. 7, 8.

Coal Measures: Eugene, Vermilion County, Indiana.

1884. Polyphemopsis nitidula. White, 13th Rep. Geol. Surv. Ind., p. 163, pl. 27, figs. 7, 8.

Coal Measures: Eugene, Vermilion County, Indiana.

1889. Bulimorpha nitidula. Keyes, Proc. Acad. Nat. Sci. Phil., p. 302.

#### Bulimorpha? peracuta Meek and Worthen.

1860. Eulima? peracuta. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 466. Lower Coal Measures: Jacksburg, St. Clair County, Illinois. Upper Coal Measures: Near Springfield, Illinois.

 Polyphemopsis peracuta. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 148.

1866. Polyphemopsis peracuta. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 375, pl. 31, figs. 7a, b.

Upper Coal Measures: Near Urbana, St. Clair County, and near Springfield, Illinois.

1884. Polyphemopsis peracuta. White, 13th Rep. Geol. Surv. Ind., p. 163, pl. 32, figs. 9, 10.

Coal Measures: Indiana (?).

1889. Polyphemopsis peracuta. Keyes, Proc. Acad. Nat. Sci. Phil., p. 302.

1894. Eulima? peracuta. Keyes, Mo. Geol. Surv., vol. 5, p. 205. Upper Coal Measures: Sullivan County, Missouri.

## BURSACRINUS Meek and Worthen, 1861.

#### Bursacrinus confirmatus White.

1862. Bursacrinus confirmatus. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 11.
Lower Burlington L. S.: Burlington, Iowa.

## Bursacrinus wachsmuthi Meek and Worthen.

1861. Bursacrinus Wachsmuthi. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 137.

Burlington L. S.: Burlington, Iowa.

#### Bursacrinus wachsmuthi Meek and Worthen—Continued.

1868. Bursacrinus Wachsmuthi. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 479, pl. 17, fig. 6.

Burlington Group: Burlington, Iowa.

## CACTOORINUS Wachsmuth and Springer, 1897.

#### Cactocrinus arnoldi Wachsmuth and Springer.

1890. Actinocrinus arnoldi. Wachsmuth and Springer, Geol. Surv. Ill., vol. 8, p. 168, pl. 17, fig. 10.

Kinderhook Group: Le Grand, Iowa.

1897. Cactoorinus Arnoldi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 624, pl. 57, figs. 4a, b.

Kinderhook Group: Le Grand, Marshall County, Iowa.

#### Cactocrinus clarus Hall.

1861. Actinocrinus clarus. Hall, Desc. New Spec. Crin., p. 2. Burlington L. S.

1861. Actinocrinus clarus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 277. Burlington L. S.: Burlington, Iowa.

1872. Actinocrinus Clarus. Hall, Photo. Plates of Crin., pl. 3, figs. 24, 25.

1893. Actinocrinus clarus. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 8, pl. 1, figs. 4, 5.

Burlington L. S.: Burlington, Iowa.

1897. Cactocrinus clarus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 612, pl. 57, figs. 9, 10; pl. 58, fig. 1.
Lower Burlington L. S.: Burlington, Iowa.

#### Cactocrinus colatus Hall.

1858. Actinocrinus calatus. Geol. Iowa, vol. 1, pt. 2, p. 585, pl. 10, fig. 14a, b. Burlington L. S.: Burlington, Iowa.

1860. Actinocrinus coelatus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., pl. 2, fig. 1.

1894. Actinocrinus calatus. Keyes, Mo. Geol. Surv., vol 4, p. 187.

Lower Burlington L. S.: Hannibal and White Ledge, Missouri.

1897. Cactocrinus cœlatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 618, pl. 59, figs. 8, 9.
 Lower Burlington L. S.: Burlington, Iowa.

#### Cactocrinus cœlatus var. spinotentaculus Hall.

1860. Actinocrinus spino-tentaculus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 86. Burlington L. S.: Burlington, Iowa.

1872. Actinocrinus spinotentaculites. Hall, Photo. Plates of Crinoids, pl. 3, figs. 13-17.

1897. Cactocrinus cœlatus var. spinotentaculus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 619, pl. 59, fig. 10.
Lower Burlington L. S.: Burlington, Iowa.

#### Cactocrinus denticulatus Wachsmuth and Springer.

1897. Cactoorinus denticulatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 606, pl. 57, figs. 5a, b.

Lower Burlington L. S.: Burlington, Iowa.

## Cactocrinus ectypus Meek and Worthen.

1869. Strotocrinus ectypus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 159. Lower Burlington L. S.: Burlington, Iowa.

1873. Strotocrinus ectypus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 353, pl. 7, fig. 5.

Burlington L. S.: Burlington, Iowa.

## Cactocrinus ectypus Meek and Worthen-Continued.

1897. Cactoorinus ectypus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 611, pl. 56, fig. 10.

Lower Burlington L. S.: Burlington, Iowa.

#### Cactocrinus extensus Wachsmuth and Springer.

1897. Cactocrinus extensus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 616, pl. 57, figs. 6, 7.

Lower Burlington L. S.: Burlington, Iowa.

## Cactocrinus fossatus Miller.

1892. Actinocrinus fossatus. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 40, pl. 6, figs. 11, 12.

Burlington Group: Sedalia, Missouri.

1894. Actinocrimus fossatus. Miller, 18th Rep. Gool. Surv. Ind., p. 294, pl. 6, figs. 11, 12.

Burlington Group: Sedalia, Missouri.

1894. Actinocrinus fossatus. Keyes, Mo. Geol. Surv., vol. 4, p. 188. Burlington L. S.: Sedalia, Missouri.

1897. Cactocrinus fossatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 620, pl. 55, fig. 12.
Lower Burlington L. S.: Sedalia. Missouri.

#### Cactocrinus glans Hall.

1860. Actinocrinus glans. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 16. Burlington L. S.: Burlington, Iowa.

1860. Actinocrinus tholus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 35. Burlington L. S.: Burlington, Iowa.

1861. Actinocrinus cryx. Hall, Desc. New Spec. Crin., p. 12. Burlington L. S.

1892. Actinocrinus blairi. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 35, pl. 5, figs. 27-29.

Burlington Group: Sedalia, Missouri.

1893. Actinocrinus glans. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 10, fig. pl. 1, figs. 11, 12.
Upper Burlington L. S.: Burlington, Iowa.

1894. Actinocrinus blairi. Miller, 18th Rep. Geol. Surv. Ind., p. 289, pl. 5, figs. 27-29.

Burlington Group: Sedalia, Missouri.

1894. Actinocrinus glans. Keyes, Mo. Geol. Surv., vol. 4, p. 189, pl. 24, figs. 2a, b. Upper Burlington L. S.: Ash Grove, Missouri.

1897. Cactocrinus glans. Wachsmuth and Springer, N. Am. Crin. Cam., p. 625, pl. 54, figs. 5, 6a-b, 7.
Upper Burlington L. S.: Burlington, Iowa.

## Cactocrinus limabrachiatus Hall.

1861. Actinocrinus limabrachiatus. Hall, Desc. New Spec. Crin., p. 2. Burlington L. S.

1861. Actinocrinus limabrachiatus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 268. Burlington L. S.: Burlington, Iowa.

1893. Actinocrinus limabrachiatus. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 5, pl. 1, figs. 8, 9.

Burlington L. S.: Burlington, 'Iowa.

1897. Cactocrinus limabrachiatus. Wachsmith and Springer, N. Am. Crin. Cam., p. 608, pl. 58, figs. 9, 10a-b.
Lower Burlington L. S.: Burlington, Iowa.

## Cactocrinus longus Meek and Worthen.

- 1869. Actinocrinites longue. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 157.
  - Lower Burlington L. S.: Burlington, Iowa.
- 1873. Actinocrinites longus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 345, pl. 8, fig. 1.
  - Lower Burlington L. S.: Burlington, Iowa.
- 1897. Cactoorinus longus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 609, pl. 57, fig. 8.
  Lower Burlington L. S.: Burlington, Iowa.

## Cactocrinus lucina Hall.

- 1861. Actinocrinus lucina. Hall, Desc. New Spec. Crin., p. 11. Burlington L. S.
- 1891. Actinocrinus puteatus. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 101, pl. 2, fig. 16.
  - Lower Burlington L. S.: Louisiana, Missouri.
- 1897. Cactocrimus lucina. Wachsmuth and Springer, N. Am. Crin. Cam., p. 603, pl. 56, figs. 8, 9.
  - Lower Burlington L. S.: Burlington, Iowa; Louisiana, Missouri.

#### Cactocrinus multibrachiatus Hall.

- 1858. Actinocrinus multibrachiatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 580, pl. 10, fig. 10.
  - Burlington L. S.: Burlington, Iowa.
- 1861. Actinocrinus multibrachiatus var. echinatus. Hall, Desc. New Spec. Crin., p. 10.
  - Burlington L. S.
- 1897. Cactocrinus multibrachiatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 617, pl. 56, figs. 6, 7, pl. 58, fig. 8.
  Lower Burlington L. S.: Burlington, Iowa.

#### Cactocrinus nodobrachistus Wachsmuth and Springer.

- 1890. Actinocrinus nodobrachiatus. Wachsmuth and Springer, Geol. Surv. Ill., vol. 8, p. 165, pl. 15, fig. 5; pl. 16, fig. 10.
  Kinderhook Group: Legrand, Iowa.

#### Cactocrinus obesus Keyes.

- 1894. Actinocrinus obesus. Keyes, Mo. Geol. Surv., vol. 4, p. 187, pl. 24, fig. 4. Burlington L. S.: Hannibal, Missouri.
- 1897. Cactocrinus obesus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 613, pl. 55, figs. 9a, b.
  Lower Burlington L. S.: Hannibal, Missouri.

#### Cactocrinus opusculus Hall.

- 1860. Actinocrinus opusculus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., pl. 2, fig. 6.
- 1861. Actinocrinus opusculus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 264. Burlington L. S.: Burlington, Iowa.
- 1893. Actinocrinus opusculus. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 9, pl. 1, figs. 6, 7; p. 28, fig. Burlington L. S.: Burlington, Iowa.
- 1897. Cactocrinus opusculus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 607, pl. 56, figs. 5a, b.
  Lower Burlington L. S.: Burlington, Iowa.

#### Cactocrinus ornatissimus Wachsmuth and Springer.

- 1890. Actinocrinus ornatissimus. Wachsmuth and Springer, Geol. Surv. Ill., vol. 8, p. 163, pl. 16, fig. 9; pl. 17, fig. 3.
  Kinderhook Group: Legrand, Iowa.
- 1897. Cactoorinus ornatissimus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 621, pl. 57, fig. 3.
  Kinderhook Group: Legrand, Marshall County, Iowa.

## Cactocrinus proboscidialis Hall.

- 1858. Actinocrinus proboscidialis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 584, pl. 10, fig. 13.
  Burlington L. S.: Burlington, Iowa.
- 1860. Actinocrinus quaternarius. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 21. Burlington L. S.: Burlington, Iowa.
- 1860. Actinocrinus proboscidialis. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., pl. 3, fig. 2.
- 1861. Actinocrinus quarternarius var. spiniferus. Hall, Desc. New Spec. Crin., p. 11.
- 1861. Actinocrinus themis. Hall, Desc. New Spec. Crin., p. 11. Burlington L. S.
- Actinocrinus excerptus. Hall, Desc. New Spec. Crin., p. 3.
   Burlington L. S.
- 1861. Actinocrinus excerptus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 276. Burlington L. S.: Burlington, Iowa.
- \*1861. Actinocrinus lagena. Hall, Desc. New Spec. Crin., p. 13. Burlington L. S.
- 1881. Actinocrinus dalyanus. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 4, p. 309, pl. 7, figs. 1, 1a.
  Subcarboniferous: Lake Valley Mining District, New Mexico.
- 1893. Actinocrinus quarternarius. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 7, pl. 1, figs. 1-3.
  Burlington L. S: Burlington, Iowa.
- 1894. Actinocrinus proboscidialis. Keyes, Mo. Geol. Surv., vol. 4, p. 185.

  Lower Burlington L. S.: Sedalia, Hannibal and Louisiana, Missouri.
- 1897. Cactocrinus proboscidalis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 601, pl. 58, figs. 3-6, 7a-d.
  Lower Burlington L. S.: Burlington, Iowa; Sedalia, Missouri; Lake Valley, New Mexico.

#### Cactocrinus reticulatus Hall.

- 1861. Actinocrinus reticulatus. Hall, Desc. New Spec. Crin., p. 2. Burlington L. S.
- Actinocrinus thous. Hall. Desc. New Spec. Crin., p. 11. Burlington L. S.
- \*1861. Actinocrinus locellus. Hall, Desc. New Spec. Crin., p. 15. Burlington L. S.
- 1861. Actinocrinus reticulatus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 269. Burlington L. S.: Burlington, Iowa.
- 1894. Actinocrinus reticulatus. Keyes, Mo. Geol. Surv., vol. 4, p. 186. Lower Burlington L. S.: Hannibal and Sedalia, Missouri.
- 1897. Caotocrinus reticulatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 605, pl. 58, figs. 2a, b.
  Lower Burlington L. S.: Burlington, Iowa.

#### Cactocrinus reticulatus var. ovatus Hall.

1861. Actinocrinus ovatus. Hall, Desc. New Spec. Crin., p. 10. Burlington L. S.

#### Cactorrinus reticulatus var. ovatus Hall—Continued.

1897. Cactocrinus reticulatus var. ovatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 608, pl. 57, fig. 11.

Lower Burlington L. S.: Burlington, Iowa.

#### Cactocrinus sexarmatus Hall.

- 1860. Actinocrinus sexarmatus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 21. Burlington L. S.: Burlington, Iowa.
- 1872. Actinogrinus sexarmatus var. Hall, Photo. Plates of Crinoids, pl. 3, fig. 26.
- 1897. Cactoorinus sexarmatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 615, pl. 55, figs. 10, 11.

Lower Burlington L. S.: Burlington, Iowa.

#### Cactocrinus thalia Hall.

- \*1861. Actinocrinus thalia. Hall, Desc. New Spec. Crin., p. 13.
  Burlington L. S.
- \*1861. Actinocrinus infrequens. Hall, Desc. New Spec. Crin., p. 14. Burlington L. S.
- 1891. Actinocrinus nodosus. Miller, Bull. Mo. Geol. Surv., No. 4, p. 33, pl. 5, fig. 7. Burlington Group: Sedalia, Missouri.
- 1894. Actinocrinus thalia. Keyes, Mo. Geol. Surv., vol. 4, p. 187. Lower Burlington L. S.: Sedalia, Missouri.
- 1897. Cactocrinus thalia. Wachsmuth and Springer, N. Am. Crin. Cam., p. 604, pl. 56; figs. 2; pl. 57, figs. 12, 13.
  Lower Burlington L. S.: Burlington, Iowa; Sedalia, Missouri.

#### Cactocrinus thetis Hall.

- 1861. Actinocrinus thetis. Hall, Desc. New Spec. Crin., p. 11. Burlington L. S.
- 1861. Actinocrinus securus. Hall, Desc. New Spec. Crin., p. 14. Burlington L. S.
- 1893. Actinocrinus thetis. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 6, pl. 1, fig. 10.

Yellow beds of Burlington L. S.: Burlington, Iowa.

1897. Cactocrinus thetis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 614, pl. 56, figs. 3, 4.
Lower Burlington L. S.: Hannibal, Missouri.

### CALCEOCRINUS Hall, 1852.

## Calceocrinus bradleyi. See Halysiocrinus bradleyi.

#### Calceocrinus lamellosus Hall.

1860. Cheirocrinus lamellosus. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 123. Burlington L. S.

. Calceocrinus nodosus. See Halysiocrinus ventricosus.

Calceocrinus perplexus. See Halysiocrinus perplexus.

Calceocrinus robustus. See Halysiocrinus robustus.

Calceocrinus tunicatus. See Halysiocrinus tunicatus.

Calceocrinus ventricosus. See Halysiocrinus ventricosus.

Calceocrinus wachsmuthi. See Halysiocrinus ventricosus.

## (CALLOPORA Hall, 1852.)

Callopora missouriensis Rominger. See Leioclema punctatum.

Callopora punctata Hall. See Leioclema punctatum:

## CAMAROPHORELLA Hall, 1893.

#### Camarophorella lenticularis White and Whitfield.

1862. Pentamerus lenticularis. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 295.

Chemung Group: Burlington, Iowa.

1865. Pentamerus lenticularis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 117. Base of Burlington L. S.: Burlington, Iowa.

1894. Camarophorella lenticularis. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 45, figs. 5, 6.

Yellow S. S.: Burlington, Iowa.

1895. Camarophorella lenticularis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 62, figs. 46-48.

Yellow S. S. of Burlington Group: Burlington, Iowa.

#### CAMAROPHORIA King, 1844.

## Camarophoria bisulcata Shumard.

1858. Camarophoria (!) bisulcata. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 296.

Dark Permian L. S.: Guadalupe Mountains.

1859. Camarophoria bisulcata. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 394, pl. 11, fig. 2.

Dark and White Permian L. S.: Guadalupe Mountains.

#### Camarophoria cooperensis. See Rhynchonella cooperensis.

#### Camarophoria caputtestudinis White.

1862. Rhynchonella caput testudinis. White, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 23.

Lower Burlington L.S.: Burlington, Iowa.

#### Camarophoria explanata McChesney.

1860. Rhynchonella explanata. McChesney, Desc. New Pal. Foss., p. 50. Kaskaskia L. S.

1868. Rhynchonella explanata. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 30, pl. 6, figs. 7a-c.

Chester L. S.

1894. Pugnax explanatus. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 44, figs. 14-16.

Kaskaskia L. S.: Illinois.

1895. Pugnax explanatus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 60, figs. 43-45.

Kaskaskia L. S.: Illinois.

#### Camarophoria giffordi. See Enteletes hemiplicata.

Camarophoria globulina. See Puguax globulina and Pugnax uta.

#### Camarophoria occidentalis Miller.

1881. Camarophoria occidentalis. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 4, p. 313, pl. 7, figs. 7-7b.

Subcarboniferous: Lake Valley Mining District, New Mexico.

#### Camarophoria ringens Swallow.

1860. Rhynchonella ringens. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 653. Encrinital L. S.: Callaway County, Missouri.

1894. Rhynchonella ringens. Keyes, Mo. Geol. Surv., vol. 5, p. 102. Burlington L. S.: Fulton and Haunibal, Missouri.

1895. Camarophoria ringens. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 84, fig. 45.

Burlington L. S.: Louisiana, Missouri.

## Camarophoria schlotheimi von Buch.

1859. Camerophoria schlotheimi (?) Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 395.

White Permian L. S.: Guadalupe Mountains.

#### Camarophoria subcuneata Hall.

1856. Rhynchonella subcuneata. Hall, Trans. Albany Inst., vol. 4, p. 11. St. Louis L. S.: Bloomington and Spergen Hill, Indiana.

1858. Rhynchonella subcuneata. Hall, Geol. Iowa, vol. 1, pt. 2, p. 658, pl. 23, figs. 3a-c.

Warsaw L. S.: Bloomington and Spergen Hill, Indiana.

1882. Rhynchonella subcuneata. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 51, pl. 6, figs. 47-49.

St. Louis Group: Spergen Hill, Paynters Hill, and Bloomington, Indiana.

1883. Rhynchonella subcunesta. Hall, 12th Rep. Geol. Surv. Ind., p. 333, pl. 29, figs. 47-49.

St. Louis Group: Bloomington, Lanesville, and Spergen Hill, Indiana.

1888. Rhynchenella subcunsata? Herrick, Bull. Den. Univ., vol. 3, p. 39, pl. 7, fig. 23.

Waverly Group: Licking County, Ohio.

1894. Camarophoria subcuneata. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 45, figs. 3, 4.

St. Louis Group: Washington County, Indiana.

1894. Rhynchonella subouncata. Keyes, Mo. Geol. Surv., vol. 5, p. 102. Keokuk L. S.: Boonville, Missouri.

1895. Camarophoria subcuneata. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 62, figs. 34-37.

St. Louis Group: Washington County, Indiana.

#### Camarophoria subtrigona Meek and Worthen.

1860. Rhynchonella subtrigona. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 451.

Keokuk L. S.: Warsaw, Illinois.

\*1860. Rhynchonella Parvini. McChesney, Desc. New Spec. Pal. Foss., p. 83.

1866. Camarophoria subtrigona. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 251, pl. 18, figs. 8a-c.

Keokuk L. S.: Keokuk, Iowa; Nauvoo and Warsaw, Illinois.

1868. Camarophoria subtrigona. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 31, pl. 6, figs. 2a, b. Keokuk L. S.: Keokuk, Iowa; Nauvoo and Warsaw, Illinois.

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1894. Camarophoria subtrigona. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 45, figs. 1, 2.

Chert of Burlington L. S.: Burlington, Iowa.

Keokuk Group: Nauvoo, Illinois.

1894. Rhynchonella subtrigona. Keyes, Mo. Geol. Surv., vol. 5, p. 102. Keokuk L. S.: Wayland, Missouri.

1895. Camarophoria subtrigona. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 62, figs. 38-43.

Chert of Burlington L. S.: Burlington, Iowa; Pike County, Missouri. Keokuk Group: Nauvoo, Illinois.

## Camarophoria swalloviana. See Pugnax swalloviana.

#### Camarophoria thera Walcott.

1884. Bhynchonella Thera. Walcott, Pal. Eureka Dist., p. 223, pl. 7, tigs. 6-6c. Lower Carboniferous: Eureka District, Nevada.

#### Camarophoria wortheni Hall.

1856. Rhynchonella Wortheni. Hall, Trans. Albany Inst., vol. 4, p. 11
St. Louis L. S.: Alton, Illinois.

#### Camarophoria wortheni Hall—Continued.

- 1882. Camarophoria Wortheni. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 54, pl. 6, figs. 35-39.
  - St. Louis Group: Alton, Illinois.
- 1883. Camarophoria (†) wortheni. Hall, 12th Rep. Geol. Surv. Ind., p. 334, pl. 29, figs. 35-39.
  - St. Louis Group: Alton, Illinois.

## CAMAROTŒCHIA Hall, 1892.

#### Camarotoschia contracta Hall.

- 1867. Rhynchonella (Stenocisma) contracta. Hall, Pal. N. Y., vol. 4, p. 351, pl. 55, figs. 26-39.
  - Chemung Group: New York; Licking County, Ohio.
- 1888. Rhynchonella contracta. Herrick, Bull. Den<sub>e</sub> Univ., vol. 3, p. 39, pl. 10, fig. 9. Waverly Group: Licking County, Ohio.
- 1888. Rhynchonella contracta. Herrick, Bull. Den. Univ., vol. 4, p. 23, pl. 11, fig. 21.
  - Waverly Group: Medina County, Ohio.

#### Camarotæchia endlichi Meek.

- 1875. Rhynchonella Endlichi. Meek, Bull., U. S. G. and G. Surv. Terr., vol. 1, 2d ser., No. 1, p. 46.
  - Carboniferous?: East of the Animas River, Colorado Territory.
- 1880. Rhynchonella endlichi. White, Cont. to Inv. Pal., No. 6, p. 133, pl. 33, figs. 4a, b, pl. 36, figs. 2a, b.
  Upper Devonian or Carboniferous: East of Animas River, Colorado.

#### Camarotœchia marshallensis Winchell.

- 1862. Rhynchonella Marshallensis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 408. Marshall Group: Marshall, Michigan.
- 1870. Rhynchonella Marshallensis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 253. Waverly Group: Granville, Ohio.
- 1888. Rhynchonella marshallensis. Herrick, Bull. Den. Univ., vol. 3, p. 40. Waverly Group: Licking County, Ohio.
- 1888. Rhynchonella marshallensis. Herrick, Bull. Den. Univ., vol. 4, p. 23, pl. 3, fig. 18.
  - Waverly Group: Ashland County, and near Granville, Ohio.
- 1895. Rhynchonella marshallensis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 23, fig. 14. Cuyahoga Shale: Ohio.

#### Camarotechia sageriana Winchell.

- 1862. Rhynchonella Sageriana. Winchell, Proc. Acad. Nat. Sci. Phil., p. 407. Marshall S. S.: Marshall, Michigan.
- 1865. Rhynchonella Sageriana. Winchell, Proc. Acad. Nat. Sci. Phil., p. 122.
  Marshall Group: Weymouth, near Ashland, Drew's sawmill, Big Brook,
  Orange, Cuyahoga County, and 2 miles southwest of Northfield Center,
  Summit County, Ohio.
- 1869. Rhynchonella Sageriana. Winchell, Safford's Geol. of Tenn., p. 443. Shale just above Black Shale: Hickman and Maury counties, Tennessee.
- 1870. Rhynchonella Sageriana. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 253.
  Waverly Group: Tennessee; Vinton County, Newark, Sciotoville, and Granyille, Ohio.
- 1888. Rhynchonella eageriana. Herrick, Bull. Den. Univ., vol. 3, p. 39, pl. 2, fig. 15. Waverly Group: Licking County, Ohio.

#### Camarotochia sappho Hall.

1867. Rhynchonella (Stenocisma) sappho. Hall, Pal. N. Y., vol. 4, p. 340, pl. 54, figs. 33-43.

Hamilton Group: New York.

1888. Rhynchonella sappho. Herrick, Bull. Den. Univ., vol. 3, p. 40, pl. 5, fig. 1, pl. 7, fig. 25.

Waverly Group: Licking County, Ohio.

1895. Rhynchonella sappho. Herrick, Geol. Surv. Ohio, vol. 7, pl. 21, fig. 1. Kinderbook er base of Burlington: Ohio.

#### CAMPOPHYLLUM Edwards and Haime, 1850.

## Campophyllum kansasense Miller and Gurley.

1894. Campophyllum kansasense. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 67, pl. 7, figs. 19-22.

Upper Coal Measures: Kansas City, Missouri.

## Campophyllum? texanum Shumard.

1859. Campophyllum (?) Texanum. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 388.

White Permian L. S.: Guadalupe Mountains.

## Campophyllum torquium Owen.

1852. Cyathophyllum (vermicularef). Owen, Geol. Rep. Wis. Iowa and Minn., tab. 4, fig. 2.

Carboniferous L. S.: Near mouth of Keg Creek.

1852. Cyathophyllum torquium. Owen, Geel. Rep. Wis., Iowa, and Minn., tab. 4, fig. 2.

Carboniferous L. S.: Near mouth of Keg Creek.

1852. Cyathophylium flexuosum (?). Owen, Geol. Rep. Wis., Iowa, and Minn., tab. 4, figs. 3a, b.

Carboniferous L.S.: Near mouth of Keg Creek.

1872. Campophyllum torquium. Meek, U. S. Geol. Surv. Nebr., p. 145, pl. 1, figs. 1a-d.

Upper Coal Measures: Rock Bluff and Cedar Bluff, Nebraska; Iowa. Coal Measures: Illinois.

1884. Campophyllum torquium. White, 13th Rep. Geol. Surv. Ind., p. 119, pl. 23, figs. 10-13.

Upper Coal Measures: Iowa; Missouri; Nebraska; Illinois; Indiana.

1894. Campophyllum torquium. Keyes, Mo. Geol. Surv., vol. 4, p. 107, pl. 12, figs. 7a-c, pl. 13, fig. 7.

Coal Measures: Kansas City, Missouri.

## Campophyllum (species undetermined).

1876. Campophyllum — f —. White, Powell's Geol. Rep. Uinta Mts., p. 88. Red Wall Group: Cataract Canyon, Utah.

1877. Campophyllum (undt. sp.) Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 57, pl. 5, figs. 2, 2b. (Zaphrentis undt. sp.) on explanation of plate. Carboniferous: Diamond Range, near Newark.

## CAMPTOCRINUS Wachsmuth and Springer, 1897.

#### Camptocrinus cirrifer Wachsmuth and Springer.

1897. Camptocrinus cirrifer. Wachsmuth and Springer, N. Am. Crin. Cam., p. 780, pl. 76, figs. 13a-c.

Kaskaskia Group: Near Sloan's Valley, Pulaski County, Kentucky

Bull. 153----11

## Camptocrinus myelodactylus Wachsmuth and Springer.

1897. Camptocrinus myelodactylus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 779, pl. 75, figs. 1, 2a, b.

Keokuk Group: Indian Creek, Montgomery County, Indiana.

#### CANDONA Baird, 1845.

#### Candona? elongata Jones and Kirkby.

1884. Candonia? elongata. Jones and Kirkby, Geol. Mag. (3), vol. 1, p. 361, pl. 12, fig. 10.

Coal Measures: Joggins, Nova Scotia.

## CAPULUS Montfort, 1810.

## Capulus acutirostris. See Orthonychia acutirostre.

## Capulus biserialis Hall.

1860. Platyceras biserialis. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 90. Burlington L. S.; Quincy, Illinois.

1868. Platyceras biserialis. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 509, pl. 15, figs. 3a, b.
Burlington L. S.: Quincy, Illinois.

1890. Capulus biscrialis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 167. Burlington L. S.: Quincy, Illinois.

1890. Capulus biserialis. Keyes, Am. Geol., vol. 6, p. 9.

1894. Capulus biscrialis. Keyes, Mo. Geol. Surv., vol. 5, p. 177, pl. 53, figs. 12a, b. Burlington L. S.: Quincy, Illinois.

## Capulus capax Keyes.

1888. Platyceras capax. Keyes, Proc. Am. Phil. Soc., vol. 25, p. 241, pl., figs. 14, 15.
Burlington L. S.: Near Burlington, Iowa.

1890. Platyceras capax. Keyes, Proc. Acad. Nat. Sci. Phil., p. 179.

#### Capulus chesterensis. See Orthonychia chesterensis.

Capulus cornuformis. See Orthonychia cornuforme.

Capulus cyrtolites. See Orthonychia cyrtolites.

#### Capulus equilateralis Hall.

1852. Ancella crassicollis? Owen, Geol. Rep. Wis., Iowa, and Minn., tab. 5, fig. 7.

Lower Carboniferous L. S.: Keokuk rapids of the Mississippi River.

1860. Platyceras equilatera. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 89. Keokuk L. S.: Keokuk, Iowa, Warsaw, Illinois.

1873. Platyceras equilatera. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 518, pl. 17, fig. 2.
Keokuk Group: Keokuk, Iowa; Warsaw, Illinois.

1881. Platyceras equilatera. White, 2d Ann. Rep. Dep. Stat. and Gool. Ind., p. 514, pl. 7, fig. 5.
Keokuk Group: Crawfordsville, Indiana.

1888. Platyceras equilaterum. Keyes, Proc. Am. Phil. Soc., vol. 25, p. 242, pl., figs. 2, 3.

1889. Platyceras equilaterum. Keyes, Am. Geol., vol. 3, p. 330, figs. 1, 2. Keokuk Shale: Crawfordsville, Indiana.

1889. Platyceras equilaterum. Keyes, Proc. Acad. Nat. Sci. Phil., p. 288. Burlington L. S.: Burlington, Iowa.

1890. Capulus equilaterus. Keyes, Am. Geol., vol. 6, p. 9.

1890. Capulus equilateralis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 171, pl. 2, fig. 11.

#### Capulus equilateralis Hall—Continued.

1890. Keokuk Group: Keokuk and Bonaparte, Iowa; Warsaw and Niota, Illinois; Crawfordsville, Indiana.

Burlington L. S.: Burlington, Iowa.

1894. Capulus equilateralis. Keyes, Mo. Geol. Surv., vol. 5, p. 178, pl. 52, figs. 10a, b.

Burlington L. S. · Burlington, Iowa; Springfield, Missouri.

Keokuk L. S. and Shales: Wayland, Missouri; Keokuk and Bonaparte, Iowa; Warsaw and Niota, Illinois.

## Capulus fissurella. See Igoceras fissurella.

Capulus formosum. See Orthonychia formosum.

## Capulus haliotoides Meek and Worthen.

1866. Platyceras haliotoides. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 264.

Waverly S. S.: Richfield, Ohio.

1868. Platyceras kaliotoides. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 458, pl. 14, figs. 3a, b.

Waverly Group: Richfield, Ohio.

1870. Platyceras kaliotoides. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 257. Waverly Group: Newark, Ohio.

1888. Platycerae haliotoides. Herrick, Bull. Den. Univ., vol. 3, p. 91, pl. 2, fig. 23. Waverly Group: Licking County, Ohio.

1890. Capulus kaliotoides. Keyes, Proc. Acad. Nat. Sci. Phil., p. 165. Kinderhook beds: Richfield and Newark, Ohio.

1891. Platystoma broadheadi. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 86, pl. 14, figs. 19, 20.

Chouteau L. S.: Sedalia, Missouri.

1892. Platystoma broadheadi. Miller, 17th Rep. Geol. Surv. Ind., p. 696, pl. 14, figs. 19, 20.

Chouteau L. S.: Sedalia, Missouri.

1892. Capulus haliotoides. Keyes, Am. Geol., vol. 10, p. 276.

1894. Capulus haliotoides. Keyes, Mo. Geol. Surv., vol. 5, p. 174, pl. 53, figs. 9a, b. Kinderhook L. S.: Sedalia, Missouri.

#### Capulus herzeri Winchell.

1870. Platyceras Herzeri. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 256. Waverly Group: Newark, Ohio.

1888. Platyceras heriseri. Herrick, Bull. Den. Univ., vol. 3, p. 91, pl. 2, fig, 24; pl. 5, fig. 8.
Waverly Group: Licking County, Ohio.

1890. Platyceras hertzeri. Keyes, Proc. Acad. Nat. Sci. Phil., p. 180.

1895. Platyceras hertzeri. Herrick, Geol. Surv. Ohio, vol. 7, pl. 21, fig. 8. Kinderhook: Granville, Ohio.

Capulus infundibulum. See Igoceras pabulocrinus.

#### Capulus latus Keyes.

1888. Platyceras latum. Keyes, Proc. Am. Phil. Soc., vol. 25, p. 242, pl., figs. 10, 11. Burlington L. S.: Burlington, Iowa.

1889. Platyceras latum. Keyes, Proc. Acad. Nat. Sci. Phil., p, 290. Burlington L. S.: Burlington, Iowa.

1890. Capulus latus. Keyes, Am. Geol., vol. 6, p. 9.

1890. Capulus latus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 168. Burlington L. S.: Burlington, Iowa.

1894. Capulus latus. Keyes, Mo. Geol. Surv., vol. 5, p. 176, pl. 53, figs. 13a, b. Burlington L. S.: Burlington, Iowa; Hannibal, Missouri.

## Capulus lodiensis Meek.

- 1871. Platyceras (Orthonychia?) lodiensis. Meek, Proc. Acad. Nat. Sci. Phil., p. 170. Waverly Group: Lodi, Ohio.
- 1875. Platyceras (Orthonychia?) Lodiensis. Meck, Pal. Ohio, vol. 2, p. 313, pl. 13, figs. 1a, b.
- Waverly Group: Lodi, Ohio.

  1888. Platyceras lodiensis. Herrick, Bull. Den. Univ., vol. 4, p. 46, pl. 11, fig. 2; pl. 8, figs. 1, 7.

Waverly Group: Bagdad, Ohio.

- 1890. Capulus lodiensis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 165. Kinderhook beds: Lodi, Ohio.
- 1894. Capulus lodensis. Keyes, Mo. Geol. Surv., vol. 5, pl. 53, figs. 6a, b.
- 1895. Platyceras lodiensis. Herrick, Geol. Surv. Ohie, vol. 7, pl. 19, figs. 1, 7. Cuyahoga Shale: Bagdad, Ohio.

## Capulus nasutum Miller.

- 1891. Platyceras nasutum. Miller, Adv. Sheets, 17th Rep. Gool. Surv. Ind., p. 82, pl. 14, figs. 17, 18.
  - Chouteau L. S.: Sedalia, Missouri.
- 1892. Platyoeras nasutum. Miller, 17th Rep. Geol. Surv. Ind., p. 692, pl. 14, figs. 17, 18.
  Chouteau L. S.: Sedalia, Missouri.

#### Capulus obliquus Keyes.

- 1888. Platyceras obliquum. Keyes, Proc. Am. Phil. Soc., vol. 25, p. 241, pl., figs. 12, 13.
  - Upper Burlington L. S.: Burlington, Iewa.
- 1889. Platyceras obliquum. Keyes, Proc. Acad. Nat. Sci. Phil., p. 290.

Burlington L. S.: Burlington, Iowa.

- 1890. Capulus obliquus. Keyes, Am. Geol., vol. 6, p. 9.
- 1890. Capulus obliquus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 168, pl. 2, fig. 3. Burlington L. S.: Burlington, Iowa.
- 1894. Capulus obliquus. Keyes, Mo. Geol. Surv., vol. 5, p. 177, pl. 53, figs. 14a, & Burlington L. S.: Hannibal, Missouri; Burlington, Iowa.

#### Capulus occidens Walcott.

- 1884. Platyoeras occidens. Walcott, Pal. Eureka Dist., p. 254, pl. 24, figs. 9, 9s.
  Lower Carboniferous: Eureka District, Nevada.
- 1890. Capulus occidens. Keyes, Am. Geol., vol. 6, p. 9.
- 1890. Capulus occidens. Keyes, Proc. Acad. Nat. Sci. Phil., p. 163. Lower Carbonic: Eureka District, Nevada.
- 1894. Capulus occidens. Keyes, Mo. Geol. Surv., vol. 5, pl. 53, figs. 8a, b.

## Capulus ovalis Stevens.

- 1858. Acroculia oralis. Stevens, Am. Jour. Sci. (2), vol. 25, p. 261.
  Archimedes L. S.: Union County, Illinois.
- 1866. Platyceras lærigatum. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 263.
  - Chester Group: Ste. Genevieve County, Missouri; Randolph County, Illinois.
- 1890. Capulus ovalis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 176. Kaskaskia L. S.: Union and Randolph counties, Illinois; Ste. Genevieve County, Missouri.
- 1892. Capulus oralis. Keyes, Am. Geol., vol. 10, p. 276.
- 1894. Capulus ovalis. Keyes, Mo. Geol. Surv., vol. 5, p. 180.
  Kaskaskia L. S.: Union and Randolph counties, Illinois; Ste. Genevieve
  County, Missouri.

#### Capulus paralius White and Whitfield.

1862. Platyceras paralium. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 302.

Chemung Group: Burlington, Iowa.

1865. Platyceras paralium. Winchell, Proc. Acad. Nat. Sci. Phil., p. 131. Lithographic L. S.: Clarksville, Missouri.

1888. Platyceras sp. (cf. P. parelium). Herrick, Bull. Den. Univ., vol. 3, p. 92, pl. 1, fig. 23 (fig. 22 f).

Waverly Group: Licking County, Ohio.

1889. Platyceras paralium. Keyes, Proc. Acad. Nat. Sci. Phil., p. 294. Kinderhook Group: Burlington, Iowa.

1890. Capulus paralius. Keyes, Am. Geol., vol. 6, p. 9.
1890. Capulus paralius. Keyes, Proc. Acad. Nat. Sci. Phil., p. 166, pl. 2, figs. 1a, b. Kinderhook beds: Des Moines and Marshall counties, Iowa; Lodi, Ohio.

1894. Capulus paralius. Keyes, Mo. Geol. Surv., vol. 5, p. 174, pl. 53, figs. 1a-d. Chouteau L. S.: Sedalia, Missouri. Burlington L. S.: Louisiana, Missouri.

#### Capulus parvus Swallow.

1858. Capulus parvus. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 205. Coal Measures: Valley of the Verdigris, Kansas.

1872. Platyceras Nebrascensis. Meek, U. S. Geol, Surv. Nebr., p. 227, pl. 4, figs. 15a. b.

Upper Coal Measures: Three-fourths of a mile west of Nebraska City Landing, Nebraska.

Middle Coal Measures: Illinois.

1877. Platyceras Nebrascense. White, U. S. Geol. Surv. W. 100 Merid., vol. 4, p. 159, pl. 12, figs. 5a-d. Carboniferous: Near Santa Fe, New Mexico.

1884. Platyceras Nebrascene. White, 13th Rep. Geol. Surv. Ind., p. 159, pl. 32, figs. 15, 16.

Coal Measures: Eugene, Edwardsport, and New Harmony, Indiana.

1890. Capulus parrus. Keyes, Am. Geol., vol. 6, p. 9.

1890. Capulus parvus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 177, pl. 2, figs. 14a-c. Upper Coal Measures: Indiana, Iowa, Nebraska, Kansas, and New Mexico.

1894. Capulus parvus. Keyes, Mo. Geol. Surv., vol. 5, p. 180, pl. 54, figs. 5a, b. Upper Coal Measures: Kansas City, Missouri.

#### Capulus piso Walcott.

1884. Platyceras Piso. Walcott, Pal. Eureka Dist., p. 254, pl. 24, figs. 7-7b. Lower Carboniferous: Eureka District, Nevada.

1890. Capulus? piso. Keyes, Proc. Acad. Nat. Sci. Phil., p. 164. Lower Carbonic: Eureka District, Nevada.

1894. Capulus piso. Keyes, Mo. Geol. Surv., vol. 5, pl. 53, figs. 7a-c.

Capulus quincyensis. See Igoceras quincyense.

#### Capulus spinigerum Worthen.

1873. Platyceras spinigerum. Worthen, Geol. Surv. Ill., vol. 5, p. 594, pl. 28, fig. 4. Coal Measures: Near Brighton, Illinois.

1890. Capulus spinigerus. Keyes, Am. Geol., vol. 6, p. 9.
1890. Capulus spinigerus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 178. Lower Coal Measures: Brighton, Illinois.

Capulus subplicatus. See Igoceras subplicatum.

#### Capulus sulcatinus Keyes.

1890. Capulus sulcatinus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 175, pl. 2, figs. 12a, b.

Keokuk Shales: Crawfordsville, Indiana.

## Capulus tribulosus White.

- 1880. Platyceras tribulosum. White, Cont. to Inv. Pal., No. 8, p. 168, pl. 41, figs. 6a, b.
  - Burlington L. S.: Burlington, Iowa.
- 1889. Platyceras tribulosum. Keyes, Proc. Acad. Nat. Sci. Phil., p. 290. Burlington L. S.: Burlington, Iowa.
- 1890. Capulus tribulosus. Keyes, Am. Geol., vol. 6, p. 9.
- 1890. Capulus tribulosus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 170, pl. 2, figs. 4a, b. Burlington L. S.: Burlington, Iowa.
- 1894. Capulus tribulosus. Keyes, Mo. Geol. Surv., vol. 5, p. 175, pl. 53, figs. 11a-c. Burlington L. S.: Hannibal and Louislana, Missouri.

## Capulus trigonalis Stevens.

1858. Acroculia trigonalis. Stevens, Am. Jour. Sci. (2), vol. 25, p. 260. Coal Measures: Danville, Illinois.

#### (Capulus triplicatus Swallow.)

- 1858. Capulus triplicatus. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 205. Coal Measures: Near Bull Creek, Santa Fe Road, Kansas.
- 1890. Capulus triplicatus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 180. (Not a gastropod.)

#### Capulus vomerium Winchell.

- 1863. Platyceras vomerium. Winchell, Proc. Acad. Nat. Sci. Phil., p. 19.
  Yellow S. S. aud base of Burlington L. S.: Burlington, Iowa.
- 1865. Platyceras vomerium. Winchell, Proc. Acad. Nat. Sci. Phil., p. 131.
  Marshall Group: Big Brook, Orange, Cuyahoga County, Ohio.
- 1888. Platyoeras vomerium? Herrick, Bull. Den. Univ., vol. 4, pl. 7, fig. 12. Waverly Group: Moot's Run, Licking County, Ohio.
- 1890. Platyceras romerium. Keyes, Proc. Acad. Nat. Sci. Phil., p. 180.
- 1895. Platyceras romerium? Herrick, Geol. Surv. Ohio, vol. 7, pl. 18. fig. 12. Cuyahoga Shale: Moot's Run, Licking County, Ohio.

#### Capulus (species undetermined).

- 1888. Platyceras sp. Herrick, Bull. Den. Univ., vol. 3, pl. 1, fig. 22. Waverly Group: Licking County, Ohio.
- 1888. Platyceras sp. Herrick, Bull. Den. Univ., vol. 3, pl. 3, fig. 3. Waverly Group: Licking County, Ohio.
- 1888. Platyceras sp. f Herrick, Bull. Den. Univ., vol. 3, pl. 7, fig. 38. Waverly Group: Licking County, Ohio.
- 1888. Platyceras sp. Herrick, Bull. Den. Univ., vol. 3, pl. 12, fig. 38. Waverly Group: Licking County, Ohio.
- 1888. Platyceras sp. Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 14. Waverly Group: Cuyahoga Falls, Ohio.

#### CARBONARCA Meek and Worthen, 1870.

## Carbonarca gibbosa Meek and Worthen.

- 1870. Carbonarca gibbosa. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 40. Upper Coal Measures: Springfield, Illinois.
- 1875. Carbonarca gibbosa. Meek and Worthen, Geol. Surv. Ill., vol. 6, p. 531, pl. 33, fig. 6.
  - Upper Coal Measures: Springfield and Lasalle, Illinois.

## CARBONIA Jones and Kirkby, 1879.

#### Carbonia? bairdioides Jones and Kirkby.

1868. Bairdia sp. ? Dawson, Acad. Geol., p. 206, fig. 48a. Coal Measures: Nova Scotia.

#### Carbonia? bairdioides Jones and Kirkby—Continued.

\*1879. Cythere? (Carbonia) bairdioides. Jones and Kirkby, Ann. Mag. Nat. Hist. (5), vol. 4, p. 38, pl. 3, figs. 24, 25.

1884. Carbonia (†) bairdioides (†). Jones and Kirkby, Geol. Mag. (3), vol. 1, p. 359, pl. 12, figs. 8a-d.

Coal Measures: Joggins, Nova Scotia.

#### Carbonia! elongata Jones and Kirkby.

\*1884. Carbonia f elongata. Jones and Kirkby, Ann. Mag. Nat. Hist. (6), vol. 1, p. 361, pl. 12, fig. 10.

Carboniferous: Joggins, Nova Scotia.

## Carbonia fabulina Jones and Kirkby.

1868. Cytherella inflata. Dawson, Acad. Geol., p. 206, fig. 48. Coal Measures: Nova Scotia.

\*1879. Carbonia fabulina. Jones and Kirkby, Ann. Mag. Nat. Hist. (5), vol. 4, p. 31, pl. 2, figs. 1-9.

1884. Carbonia fabulina. Jones and Kirkby, Geol. Mag. (3), vol. 1, p. 358, pl. 12, figs. 9a-e.

Coal Measures: Joggins, Nova Scotia.

## CARBONICOLA McCoy, 1856.

#### Carbonicola angulata Dawson.

1868. Naiadites angulata. Dawson, Acad. Geol., p. 205, fig. 46. Lower Coal Formation: Parrsborough, Nova Scotia.

1894. Carbonicola angulata. Hind, Quart. Jour. Geol. Soc. Lond., vol. 50, p. 442, pl. 20, fig. 14.

#### Carbonicola bradorica Dawson.

1868. Anthracosia Bradorica. Dawson, Acad. Geol., p. 314, fig. 133b.

Lower Carboniferous: Braddeck, Cape Breton.

1894. Carbonicola Bradorica. Dawson, Rev. Biv. Moll. Coal-Form. Nova Scotia, p. 18, fig.

Lower Carboniferous: Braddeck, Cape Breton.

#### CARDINIA Agassiz, 1838.

Cardinia aquimarginalis. See Edmondia aquimarginalis.

#### Cardinia antigonesensis Dawson.

1868. Cardinia Antigonesensis. Dawson, Acad. Geol., p. 304. Carboniferous L. S.: Antigonish, Nova Scotia.

Cardinia concentrica. See Sanguinolites concentricus.

#### Cardinia cordata Swallow.

1858. Cardinia cordata. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 191. Lower Permian: Valley of Cottonwood, Kansas.

## Cardinia fragilis Cox.

1857. Cardiniat fragilis. Cox, Geol. Rep. Ky., vol. 3, p. 570, pl. 8, fig. 9. Coal Measures: Airdrie, Muhlenburg County, Kentucky.

## Cardinia listeri Sowerby.

1858. Cardinia Listeri (†). Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 192.

Permian: Kansas.

#### Cardinia nana.

1868. Cardinia nana. Dawson, Acad. Geol., p. 304. Carboniferous L. S.: Onslow, Nova Scotia.

#### Cardinia occidentalis Swallow.

1860. Cardinia occidentalis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 655. Chouteau L. S.: Cooper, Saline, and Moniteau counties, Missouri.

#### Cardinia occidentalis var. minor Swallow.

1860. Cardinia occidentatis var. minor. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 655.

Chouteau L. S.: Cooper, Saline, and Moniteau counties, Missouri.

## Cardinia subangulata Swallow.

1858. Cardinia (†) sub-angulata. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 192.

Lower Permian: Valley of Cottonwood, Kansas.

#### Cardinia subangulata Dawson.

1868. Cardinia sub-angulata. Dawson, Acad. Geol., p. 304, fig. 108. Carboniferous L. S.: Pugwash, Nova Scotia.

## CARDIOLA Broderip, 1844.

## Cardiola filicostata Walcott.

1884. Cardiola? filicostata. Walcott, Pal. Eureka Dist., p. 251, pl. 22, figs. 4, 4a. Lower Carboniferous: Eureka District, Nevada.

## CARDIOMORPHA De Koninck, 1844.

## Cardiomorpha archiacana De Koninck.

1868. Cardiomorpha Archiacana. Dawson, Acad. Geol., p. 304. Carboniferous L. S.: Windsor, Nova Scotia.

#### Cardiomorpha capuloides Winchell.

1862. Cardiomorpha capuloides. Winchell, Prec. Acad. Nat. Sci. Phil., p. 416. Marshall Group: Pt. aux Barques, Michigan.

## Cardiomorpha julia Winchell.

1862. Cardiomorpha Julia. Winchell, Proc. Acad. Nat. Sci. Phil., p. 416. Marshall Group: Battle Creek, Marshall and Moscow, Michigan.

1865. Cardiomorpha Julia. Winchell, Proc. Acad. Nat. Sci. Phil., p. 128. Marshall Group: Napoleon Cut, Jackson County, Michigan.

#### Cardiomorpha kansasensis Swallow.

1858. Cardiomorpha Kansasensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 191.

Permian: Valley of Cottonwood, Kansas.

## Cardiomorpha missouriensis Shumard.

1858. Cardiomorpha Missouriensis. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 207.

Coal Measures: Charbonniere, St. Louis County, and Lexington, Missouri.

1860. Nucula cylindrica. McChesney, Desc. New Pal. Foss., p. 54.
Coal Measures: Carnahan's Coal Mine, Mercer County, Illinois.

\*1865. Nucula mercerensis. McChesney, Ill. New Spec. Foss., pl. 2, figs. 12a-c.

1868. Cardiomorpha missouriensis. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 40, pl. 2, figs. 12a-c.

Coal Measures: Mercer County, Illinois.

1873. Cardiomorpha Missouriensis. Meek and Worthen, Geol. Surv., Ill., vol. 5, p. 588, pl. 27, fig. 8.

Coal Measures: Colchester. Illinois.

#### Cardiomorpha missouriensis Shumard—Continued.

1877. Cardiomorpha Missouriensis. Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 277, pl. 6, figs. 1, 2.

Coal Measures: Near Eberhardt Mills, White Pine, Nevada.

1894. Cardiomorpha missourioneis. Keyes, Mo. Geol. Surv., vol. 5, p. 131.

Lower Coal Measures: Charboniere and Lexington, Missouri.

## Cardiomorpha modiolaris Winchell.

1862. Cardiomorpha modiolaris. Winchell, Proc. Acad. Nat. Sci. Phil., p. 416.

Marshall Group: Columbia, Marshall, Moscow, and Battle Creek, Michigan.

#### Cardiomorpha ovata. See Dexiobia ovata.

## Cardiomorpha parvirostris White.

1862. Cardiomorpha (Cardiopsis?) parvirostris. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 31.

## Cardiomorpha pellensis Worthen.

1884. Cardiomorpha? pellaensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 16.

St. Louis L. S: Pella, Iowa.

1890. Cardiomorpha? pellensis. Worthen, Geol. Surv. Ill., vol. 8, p. 126, pl. 19, figs. 9-95.

St. Louis Group: Pella, Iowa.

#### Cardiomorpha radiata. See Cardiopsis radiata.

#### Cardiomorpha rhomboidea Swallow.

1858. Cardiomorpha? rhomboidea. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 191.

Lower Permian: Near Council Grove, Kansas.

## Cardiomorpha rhomboidea Hall. See Cardiomorpha subrhomboidea.

#### Cardiomorpha subglobosa Meek.

1875. Cardiomorpha subglobosa. Meek, Pal. Ohio, vol. 2, p. 304, pl. 15, figs. 6a, b. Waverly Group: Rushville, Ohio.

#### Cardiomorpha subrhomboidea Hall.

1858. Cardiomorpha (1) rhomboidea. Hall, Geol. Iowa, vol. 1, pt. 2, p. 523. (Not C. rhomboidea Swallow, 1858.)

Chemung Group: Burlington, Iowa.

1877. Cardiomorpha subrhomboidea. Hall, 1st edit. Miller's Am. Pal. Foss, p. 186.

## Cardiomorpha triangulata Swallow.

1860. Cardiemorpha (f) triangulata. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 655.

Chouteau L. S.: Cooper County, Missouri.

1894. Cardiomorpha triangulata. Keyes, Mo. Geol. Surv., vol. 5, p. 131. Chouteau L. S.: Cooper County, Missouri.

#### Cardiomorpha trigonalis Winchell.

1863. Cardiomorpha trigonalis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 15. Yellow S. S.: Burlington, Iowa.

#### Cardiomorpha vindobonensis Hartt.

1868. Cardiomorpha Vindobonensis. Hartt, Dawson's Acad. Geol., p. 304, fig. 109. Carboniferous L. S.: Nova Scotia.

#### Cardiomorpha (species undetermined).

1859. Cardiemorpha sp. (?) Shumard, Trans. St. Louis. Acad. Sci., vol. 1, p. 398. White Permian L. S.: Guadalupe Mountains.

#### Cardinia occidentalis Swallow.

1880. Cardinia occidentalis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 655. Chouteau L. S.: Cooper, Saline, and Moniteau counties, Missouri.

#### Cardinia occidentalis var. minor Swallow.

1860. Cardinia occidentalis var. minor. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 655.

Chouteau L. S.: Cooper, Saline, and Moniteau counties, Missouri.

## Cardinia subangulata Swallow.

1858. Cardinia (?) sub-angulata. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 192.

Lower Permian: Valley of Cottonwood, Kansas.

#### Cardinia subangulata Dawson.

1868. Cardinia sub-angulata. Dawson, Acad. Geol., p. 304, fig. 108. Carboniferous L. S.: Pugwash, Nova Scotia.

#### CARDIOLA Broderip, 1844.

#### Cardiola filicostata Walcott.

1884. Cardiola? filicostata. Walcott, Pal. Eureka Dist., p. 251, pl. 22, figs. 4, 4a. Lower Carboniferous: Eureka District, Nevada.

## CARDIOMORPHA De Koninck, 1844.

#### Cardiomorpha archiacana De Koninck.

1868. Cardiomorpha Archiacana. Dawson, Acad. Geol., p. 304. Carboniferous L. S.: Windsor, Nova Scotia.

#### Cardiomorpha capuloides Winchell.

1862. Cardiomorpha capuloides. Winchell, Proc. Acad. Nat. Sci. Phil., p. 416. Marshall Group: Pt. aux Barques, Michigan.

### Cardiomorpha julia Winchell.

1862. Cardiomorpha Julia. Winchell, Proc. Acad. Nat. Sci. Phil., p. 416.

Marshall Group: Battle Creek, Marshall and Moscow, Michigan.

1865. Cardiomorpha Julia. Winchell, Proc. Acad. Nat. Sci. Phil., p. 128.
Marshall Group: Napoleon Cut, Jackson County, Michigan.

#### Cardiomorpha kansasensis Swallow.

1858. Cardiomorpha Kansasensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 191.

Permian: Valley of Cottonwood, Kansas.

#### Cardiomorpha missouriensis Shumard.

1858. Cardiomorpha Missouriensis. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 207.

Coal Measures: Charbonniere, St. Louis County, and Lexington, Missouri.

1860. Nucula cylindrica. McChesney, Desc. New Pal. Foss., p. 54.
Coal Measures: Carnahan's Coal Mine, Mercer County, Illinois.

\*1865. Nucula mercerensis. McChesney, Ill. New Spec. Foss., pl. 2, figs. 12a-c.

1868. Cardiomorpha missouriensis. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 40, pl. 2, figs. 12a-c.

Coal Measures: Mercer County, Illinois.

1873. Cardiomorpha Missouriensis. Meek and Worthen, Geol. Surv., Ill., vol. 5, p. 588, pl. 27, fig. 8.

Coal Measures: Colchester, Illinois.

## Cardiomorpha missouriensis Shumard-Continued.

1877. Cardiomorpha Missouriensis. Hall and Whitfield, U. S. Gool. Expl. 40 Par., vol. 4, p. 277, pl. 6, figs. 1, 2.

Coal Measures: Near Eberhardt Mills, White Pine, Nevada.

1894. Cardiomorpha missouriensis. Keyes, Mo. Geol. Surv., vol. 5, p. 131.

Lower Coal Measures: Charboniere and Lexington, Missouri.

## Cardiomorpha modiolaris Winchell.

1862. Cardiomorpha modiclaris. Winchell, Proc. Acad. Nat. Sci. Phil., p. 416.

Marshall Group: Columbia, Marshall, Moscow, and Battle Creek, Michigan.

#### Cardiomorpha ovata. See Dexiobia ovata.

#### Cardiomorpha parvirostris White.

1862. Cardiomorpha (Cardiopsis?) parvirostris. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 31.

## Cardiomorpha pellensis Worthen.

1884. Cardiomorpha? pellacusis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 16.

St. Louis L. S: Pella, Iowa.

1890. Cardiomorpha? pellensis. Worthen, Geol. Surv. Ill., vol. 8, p. 126, pl. 19, figs. 9-95.

St. Louis Group: Pella, Iowa.

#### Cardiomorpha radiata. See Cardiopsis radiata.

#### Cardiomorpha rhomboidea Swallow.

1858. Cardiomorpha? rhomboidea. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 191.

Lower Permian: Near Council Grove, Kansas.

## Cardiomorpha rhomboidea Hall. See Cardiomorpha subrhomboidea.

## Cardiomorpha subglobosa Meek.

1875. Cardiomorpha subglobosa. Meek, Pal. Ohio, vol. 2, p. 304, pl. 15, figs. 6a, b. Waverly Group: Rushville, Ohio.

#### Cardiomorpha subrhomboidea Hall.

1858. Cardiomorpha (?) rhomboidea. Hall, Geol. Iowa, vol. 1, pt. 2, p. 523. (Not C. rhomboidea Swallow, 1858.)

Chemung Group: Burlington, Iowa.

1877. Cardiomorpha subrhomboidea. Hall, 1st edit. Miller's Am. Pal. Foss, p. 186.

#### Cardiomorpha triangulata Swallow.

1860. Cardiomorpha (f) triangulata. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 655.

Chouteau L. S.: Cooper County, Missouri.

1894. Cardiomorpha triangulata. Keyes, Mo. Geol. Surv., vol. 5, p. 131. Chouteau L. S.: Cooper County, Missouri.

## Cardiomorpha trigonalis Winchell.

1863. Cardiomorpha trigonalis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 15. Yellow S. S.: Burlington, Iowa.

## Cardiomorpha vindobonensis Hartt.

1868. Cardiomorpha Vindobonensis. Hartt, Dawson's Acad. Geol., p. 304, fig. 109. Carboniferous L. S.: Nova Scotia.

#### Cardiomorpha (species undetermined).

1859. Cardiomorpha sp. (†) Shumard, Trans. St. Louis. Acad. Sci., vol. 1, p. 398. White Permian L. S.: Guadalupe Mountains.

#### Ceriocrinus hemisphericus Shumard—Continued.

- 1873. Scaphiocrinus? hemisphericus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 561, pl. 24, fig. 5.
  - Upper Coal Measures: Springfield and Lasalle, Illinois.
- 1890. Delocrinus hemisphericus. Miller and Gurley, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 12, pl. 2, figs. 8-10.
  - Upper Coal Measures: Kansas City, Missouri.
- 1890. Delocrinus hemisphericus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 335, pl. 2, figs. 8-10; p. 370, pl. 10, fig. 5.
  Upper Coal Measures: Kansas City, Missouri.
- 1894. Ceriocrinus hemisphericus. Keyes, Mo. Geol. Surv., vol. 4, p. 220, pl. 28, figs. 2, 5.

Upper Coal Measures; Lexington, Columbia, and Kansas City, Missouri.

#### Ceriocrinus inflexus Geinitz.

1866. Cyathocrinus inflexus. Geinitz, Carb. und Dyas in Nebr., p. 62, tab. 4, . figs. 20-22.

Nebraska City, Nebraska.

1876. Scaphiocrinus carbonarius. White, Powell's Rep. Geol. Uinta Mts., p. 89. (Not S. carbonarius, M. & W., 1861.)

Lower Aubrey Group: Confluence of Grand and Green rivers, Utah.

1880. Erisocrinus (Ceriocrinus) inflexus. White, Cont. to Inv. Pal., No. 6, p. 128, pl. 34, figs. 9a, b.

Middle Carboniferous: Confluence of Grand and Green rivers, Utah.

1897. Erisocrinus (Ceriocrinus) inflexus. Smith, Proc. Am. Phil. Soc., vol. 35, p. 26.

Upper Coal Measures: Poteau Mountain, Indian Territory.

## Ceriocrinus missouriensis Miller and Gurley.

- 1890. Delocrinus missouriensis. Miller and Gurley, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 14, pl. 2, figs. 11-13.
  - Upper Coal Measures: Kansas City, Missouri.
- 1890. Delocrinus missouriensis. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 336, pl. 2, figs. 11-13.

Upper Coal Measures: Kansas City, Missouri.

#### Ceriocrinus planus White.

- 1880. Erisocrinus planus. White, Proc. U. S. Nat. Mus., vol. 2, p. 257, pl. 1, figs. 6, 7.
  - Upper Coal Measures: 30 miles west of Humboldt, Kansas.
- 1880. Erisocrinus (Coriocrinus) planus. White, Cont. to Inv. Pal., No. 6, p. 127, pl. 35, figs. 5a, b.

Upper Coal Measures: 30 miles west of Humboldt, Kansas.

## CHÆNOCARDIA Meek and Worthen, 1869.

#### Chænocardia ovata Meek and Worthen.

- 1869. Chanocardia ovata. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 170. Lower Coal Measures: West Pecan Creek, Grundy County, Illinois.
- 1873. Chanocardia ovata. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 586, pl. 27, fig. 5.

Coal Measures: Waupecan Creek, Grundy County, Illinois,

## CHÆNOMYA Meek, 1864.

#### Chænomya cooperi Meek and Hayden.

1858. Panopea Cooperi. Meek and Hayden, Trans. Albany Inst., vol. 4, p. 83. Permian: Helena, Kansas.

## Chanomya cooperi Meek and Hayden-Continued.

1858. Allorisms † Cooperi. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 264. Upper Coal Measures: Near Helena, Kansas.

1864. Chamomya Cooperi. Mock and Hayden, Pal. Upper Mo., p. 44, pl. 2, figs. 2a, b.

Coal Measures: Helena, Kansas.

## Chanomya hybrida. See Allorisma hybridum.

## Chanomya leavenworthensis Meek and Hayden.

1858. Allorisma? Leavenworthensis. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 263.

Coal Measures: Leavenworth, Kansas.

1864. Chanomys leavenworthensis. Meek and Hayden, Pal. Upper Mo., p. 43, pl. 2, figs. 1s-c.

Coal Measures: Leavenworth City, Kansas.

1872. Chanomya Learenworthensis. Meek, U. S.Geol. Surv. Nebr., p. 216, pl. 2, fig. 9. Upper Coal Measures: Rock Bluff, Nebraska; Leavenworth, Kansas. Coal Measures: Iowa, Missouri, Illinois.

1894. Chanomya learenworthensis. Keyes, Mo. Geol. Surv., vol. 5, p. 131. Upper Coal Measures: Kansas City, Missouri.

## Chenomya longa Miller and Gurley.

1896. Chanomys longs. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 8, pl. 1, figs. 12, 13.

Chouteau L. S.: Near Sedalia, Missouri.

#### Chenomya maria Worthen.

1882. Chanomya maria. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 39. Upper Coal Measures: Shawnee County, Kansas.

1883. Chanomya maria. Worthen, Geol. Surv. Ill., vol. 7, p. 319, figs. 1a, b. Upper Coal Measures: Shawnee County, Kansas.

#### Chenomya minnehaha Swallow.

1858. Allorisma (?) Minnehaha. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 194. Middle Coal Measures: Near Lexington, Missouri. Permian: Valley of Cottonwood, Kansas.

1864. Chanomya Minnehaha. Meek and Hayden, Pal. Upper Mo., p. 43.

1872. Chanomya Minnehaha. Meek, U. S. Geol. Surv. Nebr., p. 217, pl. 2, figs. 13a, b. Upper Coal Measures: Plattsmouth, Nebraska. Middle Coal Measures: Lexington, Missouri.

1873. Chanomya Minnehaha. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 588, pl. 27, fig. 3.

Upper Coal Measures: Clinton County, Illinois.

1894. Chanomya minnehaha. Keyes, Mo. Geol. Surv., vol. 5, p. 130. Upper Coal Measures: Kansas City, Missouri.

#### Chanomya rhomboidea Meek and Worthen.

1865. Chanomya? rhomboidea. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 250.

St. Louis L. S.: Alton, Illinois.

1873. Chanomya? rhomboidea. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 540, pl. 22, fig. 4.

St. Louis L. S.: Near Alton, Illinois.

CHÆTETES Fischer, 1837.

## Chætetes carbonaria Worthen. See Stenopora carbonaria.

#### Chætetes decipiens Rominger.

1866. Chatetes decipiens. Rominger, Proc. Acad. Nat. Sci. Phil., p. 116.

Keokuk Group: Lagrange, Missouri.

#### Chætetes mackrothii Geinitz.

1859. Chætetes Mackrothii. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 387. Dark Permian L. S.: Guadalupe Mountains.

### Chetetes milleporaceus Milne-Edwards and Haime.

1851. Chatetes milleporaceus. Milne-Edwards and Haime, Monog. des Polyp. Foss., p. 272.

Carboniferous: Cumberland Mountains, Tennessee; Newberg, near Evausville on the Ohio.

1860. Chatetes milleporaceus. Milne-Edwards, Hist. Nat. des Corr., vol. 3, p. 271. Carboniferous: United States.

1876. Chattets milleporaceus. White, Powell's Geol. Rep. Uinta Mts., p. 88.
Red Wall Group: Gypsum Canyon, Colorado River, Utah.
Lower Aubrey Group: Split Mountain Canyon, Green River, Utah.

1877. Chætetes milleporacous. White, U. S. Geol. Surv., W. 100 Merid., vol. 4, p. 98, pl. 6, fig. 2a.

Carboniferous: Virgin Range, southwest of St. George, Utah.

1894. Chartetes milleporaceus. Keyes, Mo. Geol. Surv., vol. 4, p. 123, pl. 14, figs. 12a, b.
Upper Coal Measures: Glasgow, Missouri.

#### Chætetes tumidus Phillips.

1836. Calamopora tumida. Phillips, Geol. Yorkshire, vol. 2, p. 200, pl. 1, figs. 49-57. Carboniferous: England.

1868. Chatetes tumidus. Dawson, Acad. Geol., p. 288, fig. 85b.
Carboniferous L. S.: Stewiacke, Windsor, and Cape Breton.

### Chætetes (species undetermined).

1859. Chætetes sp. (7). Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 388. White Permian L. S.: Guadalupe Mountains.

1877. Chætetes (?) species. Whiteaves, Geol. Surv. Canada, Rep. of Prog., 1875-76, p. 97.
Carboniferous or Permian: Rear of Fort St. James, Stewart's Lake, British Columbia.

1877. Chartetes (f) species. Whiteaves, Geol. Surv. Canada, Rep. of Prog., 1875-76, p. 99.

Devonian or Carboniferous: Fossil Point, Peace River, Canada.

1878. Chaestee sp. allied to C. tumidus (Phill.). Etheridge, Quart. Jour. Geol. Soc. Lond., vol. 34, p. 610.

Carboniferous: Feilden Isthmus, latitude 82° 43'.

# CHAINODICTYON Foerste, 1887.

#### Chainodictyon laxum Foerste.

1887. Chainodictyon larum. Foerste, Bull. Den. Univ., vol. 2, pp. 81 and 87, pl. 7, figs. 8a-c.

Coal Measures: Flint Ridge, Ohio; Seville, Illinois.

1888. Chainodictyon laxum. Foerste, Bull. Den. Univ., vol. 3, p. 135.

### Chainodictyon laxum, var minor Ulrich.

1890. Chainodictyon laxum, var. minor. Ulrich, Geol. Surv. Ill., vol. 8, p. 640, pl. 62, figs. 3, 3a.

Lower Coal Measures: Seville, Illinois,

### CHEILOTRYPA Ulrich, 1884.

# Cheilotrypa hispida Ulrich.

1884. Cheilotrypa hispida. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 7, p. 50, pl. 3, figs. 6-6d.

Kaskaskia Group: Tateville, Kentucky.

# (CHEIROCRINUS Hall, 1860.)

Cheirocrinus dactylus. See Halysiocrinus ventricosus.
Cheirocrinus nodosus. See Halysiocrinus ventricosus.
Cheirocrinus perplexus. See Halysiocrinus perplexus.
Cheirocrinus ventricosus. See Halysiocrinus ventricosus.

### CHELIPHLEBIA Scudder, 1885.

### Cheliphlebia carbonaria Scudder.

1885. Cheliphlebia carbonaria. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 328, pl. 30, fig. 8.

Carboniferous: Mazon Creek, Illinois.

1890. Cheliphlebia carbonaria. Scudder, Foss. Insc. N. A., vol. 1, p. 292, pl. 16, fig. 8.

Carboniferous: Mazon Creek, Illinois.

### Cheliphlebia elongata Scudder.

1885. Cheliphlebia elongata. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 328, pl. 29, fig. 7.

Carboniferous: Mazon Creek, Illinois.

1890. Cheliphlebia elongata. Scudder, Foss. Insc. N. A., vol. 1, p. 292, pl. 15, fig. 7. Carboniferous: Mazon Creek, Illinois.

# (CHEMNITZIA D'Orbigny, 1837.)

Chemnitzia attenuata Stevens. See Loxonema attenuata.

Chemnitzia parva Cox. See Loxonema parva.

Chemnitzia swalloviana Shumard. See Loxonema swalloviana.

Chemnitzia tenuilineata Shumard. See Loxonema tenuilineata.

# CHITON Linnæus, 1758.

### Chiton carbonarius Stevens.

1858. Chiton carbonarius. Stevens, Am. Jour. Sci. (2), vol. 25, p. 264.

Coal Measures: Danville, Illinois.

1873. Chiton carbonarius. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 608, pl. 29, fig. 15.

Coal Measures: Danville, Illinois.

# Chiton parvus Stevens.

1858. Chiton parvus. Stevens, Am. Jour. Sci. (2), vol. 25, p. 264.
Archimedes L. S.: Bergen Hill, Indiana.

# CHOLASTER Worthen and Miller, 1883.

# Cholaster peculiaris Worthen and Miller.

1883. Cholaster peculiaris. Worthen and Miller, Geol. Surv. Ill., vol. 7, p. 329, pl. 31, figs. 4a, b.

Chester L. S.: Okaw Bluffs, between Chester and Kaskaskia, Randolph County, Illinois.

CHONETES Fischer, 1837.

Chonetes fischeri. See Chonopectus fischeri.

Chonetes flemingi. See Chonetes variolatus.

Chonetes geinitzanus. See Chonetes glaber.

### Chonetes geniculatus White.

- 1862. Chonetes geniculata. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 28.

  Chemung Group: Burlington, Iowa (†); Hamburg, Illinois; Clarksville,
  Missouri.
- 1865. Chonetes geniculata. Winchell, Proc. Acad. Nat. Sci. Phil., p. 116. Marshall Group: Rockford, Indiana.
- 1870. Chonetee geniculata? Winchell, Proc. Am. Phil. Soc., vol. 11, p. 250. Waverly Group: Rockville, Ohio.
- 1894. Chonetes geniculatus. Keyes, Mo. Geel. Surv., vol. 5, p. 53, pl. 38, fig. 3. Louisians L. S.: Louisians and Clarksville, Missouri.

# Chonetes glaber Geinitz.

- 1866. Chonetes glabra. Geinitz, Carb. und Dyas in Nebr., p. 60, tab. 4, figs. 15–18. (Not C. glaber Hall, 1857.)
  Dyas: Nebraska City, Nebraska.
- 1872. Chonetes glabra. Meek, U. S. Geol. Surv. Nebr., p. 171, pl. 4, fig. 10; pl. 8, figs. 8a, b.
- Upper Coal Measures: Nebraska City, Nebraska; Atchison, Kansas. 1874. Chonetes glabra. Derby, Bull. Cornell Univ. (Science), vol. 1, No. 2, p. 43, pl. 8, figs. 11, 14, 15, 19.
- Coal Measures: Bomjardim and Itaitúba, Brazil, and Cochabamba, Bolivia.
- 1888. Chonetes lœvis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 229, pl. 12, figs. 3a, b. Lower Coal Measures: Des Moines, Iowa.
- 1889. Chonetes geinitzanus. Miller, N. A. Geol. and Pal., p. 339.
- 1891. Chonetes lœvis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 246. Lower Coal Measures: Des Moines, Iowa.
- 1892. Chonstes lavis. Keyes, Proc. Iowa Acad. Sci., vol. 1, pt. 2, p. 22. Lower Coal Measures: Near Des Moines, Iowa.
- 1894. Chonstes læris. Keyes, Mo. Geol. Surv., vol. 5, p. 55, pl. 37, figs. 5a, b. Upper Coal Measures: Kansas City, Mo.

### Chonetes granulifer Owen.

- 1852. Chonetes granulifera. Owen, Geol. Rep. Wis., Iowa, and Minn., p. 583, tab. 5, fig. 12.
  Carboniferous L. S.: Near mouth of Keg Creek.
- 1855. Chonetes Smithii. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 24, pl. 2, figs. 2a-c.
  Coal Measures: Belleville, Illinois.
- 1855. Chonetes granulifera. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 24.
  - Coal Measures: Belleville, Illinois; Keg Creek, Missouri.
- 1858. Chonetes mucronata. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 262. (Not C. mucronatas Hall, 1843.)
  Upper Coal Measures: Near Fort Riley, Kansas.
- 1859. Chonetes mucronata. Meek and Hayden, Proc. Acad. Nat. Sei. Phil., p. 26.
   Upper Coal Measures: Fort Riley and Cottonwood Creek, Kansas.
- 1864. Chonetes mucronata. Meek and Hayden, Pal. Up. Mo., p. 22, pl. 1, fig. 5a-e. Coal Measures: Near Fort Riley, Kanses.
- 1866. Chonetes mucronata. Geinitz, Carb. und Dyas in Nebr., p. 58, tab. 4, figs. 12-14.
  - Bennett's Mill and Nebraska City, Nebraska.

### Chonetes granulifer Owen—Continued.

- 1872. Chonetes granulifora. Meek, U. S. Geol. Surv. Nebr., p. 170, pl. 4, fig. 9, pl. 6, fig. 10; pl. 8, fig. 7.
  - Upper Coal Measures: Nebraska City, Wyoming, Bennett's Mill, Plattsmouth, Bellevue, and Omaha, Nebraska; Kansas; Missouri; Iowa. Coal Measures: Illinois.
- 1873. Chonetes Smithii. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 570, pl. 25, fig. 11.
  - Coal Measures: St. Clair County, Illinois.
- 1876. Chonetes granulifera. White, Powell's Rep. Geol. Uinta Mts., p. 90. Lower Aubrey Group: Confluence of Grand and Green rivers, Utah.
- 1877. Chonetes granulifera. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, pt. 1, p. 122, pl. 9, figs. 8a-c.
  - Carboniferous (Upper Aubrey L. S.): Kanab Canyon, Arizona.
- 1892. Chonetes Smithi. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 15B, fig. 12. Coal Measures: Illinois.
- 1894. Chonetes granulifera. Keyes, Mo. Geol. Surv., vol. 5, p. 56. Upper Coal Measures: Kansas City, Missouri.

### Chonetes illinoisensis Worthen.

- 1858. Chonetes logani. Hall, Geol. Iowa, vol. 1, pt. 2, p. 598, pl. 12, figs. 1a-e, 2. (Not C. logani N. & P., 1855.)
- Burlington L. S.: Burlington, Iowa; Quincy, Illinois.
- 1860. Chonetes Illinoiensis. Worthen, Trans. St. Louis Acad., vol. 1, p. 571. Crinoidal Mountain L. S.: Quincy, Illinois.
- 1863. Chonetes Illinoieneis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 5.
  Yellow S. S. and Burlington L. S.: Burlington, Iowa.
- 1865. Chonetes Illinoisensis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 116. Marshall Group: Rockford, Indiana; Licking County, Ohio. Burlington L. S.: Burlington, Iowa.
- 1868. Chonetes Illinoisensis. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 505, pl. 15, figs. 8a, b.
  - Burlington L. S.: Jersey County, Illinois; Burlington, Iowa. Kinderhook Group: Wassonville, Iowa.
- 1870. Chonetes Illinoisensis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 251. Waverly Group: Rockville, Ohio.
- 1888. Chonetes illinoiseneis. Herrick, Bull. Den. Univ., vol. 3, p. 35, pl. 3, fig. 21. Waverly Group: Licking County, Ohio.
- 1890. Chonetes illinoisensis. Herrick, Bull. Geol. Soc. Am., vol. 2, p. 48, pl. 1, fig. 16.

Keokuk: Scioto County, Ohio.

1894. Chonetes illinoisensis. Keyes, Mo. Geol. Surv., vol. 5, p. 53.

Lower Burlington L. S.: Louisiana and Ash Grove, Missouri.

#### Chonetes lævis. See Chonetes glaber.

#### Chonetes loganensis Hall and Whitfield.

1877. Chonetes Loganensis. Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 253, pl. 4, fig. 9.

Waverly Group: Logan Canyon, Wahsatch Range, Utah.

#### Chonetes logani Norwood and Pratten.

1855. Chonetes Logani. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 30, pl. 2, figs. 12a-c.

Middle portion of Mountain L. S.: Burlington, Iowa.

1865. Chonetes Logani. Winchell, Proc. Acad. Nat. Sci. Phil., p. 116.
Base of Burlington L. S.: Burlington, Iowa.

Bull. 153----12

# Chonetes logani Norwood and Pratten.

- 1883. Chonetes Logani. Hall, Rept. N. Y. State Geol. for 1882, pl. (16) 47, fig. 25.
- 1888. Chonetes logani. Herrick, Bull, Den. Univ., vol. 3, p. 35, pl. 7, fig. 22; pl. 3, fig. 12.

Waverly Group: Licking County, Ohio.

- 1892. Chonetes Logani. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1. pl. 16, fig. 25. Waverly Group: Wavne County, Ohio.
- 1894. Chonetes logani. Keyes, Mo. Geol. Surv., vol. 5, p. 53. Burlington L. S.: Hannibal and Louisiana, Missouri.

# Also see Chonetes illinoisensis.

#### Chonetes mesolobus Norwood and Pratten.

- 1855. Chonetes mesoloba. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 27, pl. 2, figs. 7a-c.
  - Coal Measures: Belleville, Illinois; Charboniere, Missouri.
- 1877. Chonetes mesoloba. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, pt. 1, p. 123, pl. 9, fig. 7a.
  - Carboniferous: Confluence of White Mountain and Black rivers, Arizona.
- 1883. Chonetes mesoloba. Hall, Rep. N. Y. State Geol. for 1882, pl. (16) 47, fig. 22. 1887. Chonetes mesoloba. Herrick, Bull. Den. Univ., vol. 2, p. 49.
  - Coal Measures: Flint Ridge, Ohio.
- 1888. Chonetes mesoloba. Keyes, Proc. Acad. Nat. Sci. Phil., p. 228. Lower Coal Measures: Des Moines, Iowa.
- 1892. Chonetes mesoloba. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 20, fig. 7.

Coal Measures: Illinois.

- 1892. Chonetes mesoloba. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 16, fig. 22. Coal Measures: Illinois.
- 1894. Chonetes mesoloba. Keyes, Mo. Geol. Surv., vol. 5, p. 53. Upper Coal Measures: Kansas City, Missouri.

### Chonetes michiganensis Stevens.

1858. Chonetes Michiganensis. Stevens, Am. Jour. Sci. (2), vol. 25, p. 263. Carboniferous: Battle Creek, Michigan.

#### Chonetes millepunctatus. See Aulacorhynchus millepunctatus.

Chonetes mucronatus. See Chonetes granuliferus.

#### Chonetes multicosta Winchell.

- 1863. Chonetes multicosta. Winchell, Proc. Acad. Nat. Sci. Phil., p. 5. Yellow S. S. and base of Burlington L. S.: Burlington, Iowa.
- 1869. Chonetes multicosta. Winchell, Safford's Geol. of Tenn., p. 443. Shales just above Black Shale: Hickman and Maury counties, Tennessee.
- 1870. Chonetes multicosta. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 250. Waverly Group: Hickman and Maury counties, Tennessee.

#### Chonetes ornatus Shumard.

- 1855. Chonetes ornata. Shumard, Geol. Rep. Mo., p. 202, pl. C, figs. 1a-c. Chemung Group: Vandever's Falls, Cooper County, Louisiana, Hannibal, and Moniteau County, Missouri.
- 1894. Chonetes ornata. Keyes, Mo. Geol. Surv., vol. 5, p. 53, pl. 38, fig. 2. Kinderhook Group: Hannibal, Louisiana, and Vandever's Falls, Missouri.

#### Chonetus parvus Shumard.

1855. Chonetes parva. Shumard, Geol. Rep. Mo., p. 201. Coal Measures: Boone County, Missouri.

#### Chonetes permianus Shumard.

1859. Chonetes Permiana. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 390. Permian Conglomerate: Mouth of Delaware Creek, Texas.

### Chonetes planumbonus Meek and Worthen.

- 1890. Chonetes planumbona. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 450. Keokuk L. S.: Monroe County, Illinois.
- 1866. Chonetes planumbona. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 253, pl. 18, figs. 1a-d.
  Keokuk L. S.: Monroe County, Illinois.

### Chonetes platynotus White.

- 1874. Chonetes platynota. White, Prelim. Rep. Inv. Foss., p. 19.
  Carboniferous (Coal Measures): Near Santa Fe and near Salt Lake, New
- 1876. Chonetes platynota. White, Powell's Rep. Geol. Uinta Mts., p. 90. Lower Aubrey Group: Near Echo Park, Utah.
- 1877. Chonetes platynota. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 121, pl. 9, figs. 6a-e.
  Carboniferous: Near Santa Fe and near Salt Lake, New Mexico.

### Chonetes pulchellus Winchell.

- 1862. Chonetes pulchella. Winchell, Proc. Acad. Nat. Sci. Phil., p. 410.
  Marshall S. S.: Moscow, Jefferson, and Allen, Hillsdale County, Michigan.
- 1865. Chonetes pulchella. Winchell, Proc. Acad. Nat. Sci. Phil., p. 115.
  Marshall Group: Hillsdale, Michigan; Howland and Warren, Trumbull County, and Tallmadge, Summit County, Ohio.
- 1869. Chonetes pulchella? Winchell, Safford's Geol. of Tenn., p. 443.
  Shales just above Black Shale: Hickman and Maury counties, Tennessee.
- 1870. Chonetes pulohella. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 250.
  Waverly Group: Tennessee; Newark, Ohio; near Shafer's, Pennsylvania.
- 1888. Chonetes pulchella. Herrick, Bull. Den. Univ., vol. 3, p. 37, pl. 3, fig. 14. Waverly Group: Licking County, Ohio.

#### Chonetes scitulus Hall.

- 1867. Chonetes scitula. Hall, Pal. N. Y., vol. 4, p. 130, pl. 21, figs. 4a, b. Hamilton Group: New York.
- 1888. Chonetes scitula. Herrick, Bull. Den. Univ., vol. 3, p. 36, pl. 1, fig. 4. Waverly Group: Licking County, Ohio.

### Chonetes setigerus Hall.

- 1867. Chonetes setigera. Hall, Pal. N. Y., vol. 4, p. 129, pl. 21, figs. 2a, b. Hamilton Group: New York.
- 1883. Chonetes setigerus. Hall, Rep. N. Y. State Geol. for 1882, pl. (16) 47, fig. 2. Waverly S. S.: Ohio.
- 1892. Chonetes setigera. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 16, figs. 2, 5, 19. Waverly Group: Penfield, Ohio.
  Marcellus Shale: New Caledonia, Missouri.

#### Chonetes shumardanus De Koninck.

- 1847. Chonetes shumardiana. De Koninck, Monog. du Gen. Prod. et Chon., p. 192, pl. 20, figs. 1a-d.
  - Carboniferous: Knobs of Jefferson County, Kentucky.
- 1855. Chonetes Shumardiana. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 24.

Mountain L. S.: Button-mould Knobs, Jefferson County, Kentucky.

# Chonetes smithi. See Chonetes granulifer.

### Chonetes tumidus Herrick.

1888. Chonetes tumidus. Herrick, Bull. Den. Univ., vol. 3, p. 36, pl. 2, fig. 21. Waverly Group: Licking County, Ohio.

### Chonetes variolata D'Orbigny.

- 1847. Chonetes variolata. De Koninck, Monog. du Gen. Prod. et Chon., p. 206, pl. 19, fig. 5; pl. 20, figs. 2a-l.
  - Carboniferous: Guernsey, Ohio; Bolivia, South America.
- 1852. Chonetes variolata. Hall, Stansb. Exped. Gt. Salt Lake, p. 410, pl. 3, figs. 1a, b.
  - Carboniferous: Near Weston on the Missouri River.
- 1855. Chonetes variolata. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 28.
  - Coal Measures: Guernsey, Ohio.
- 1855. Chonetes Flemingii. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 26, pl. 2, figs. 5a-e.
  Ten miles northwest of Richmond, Missouri.
- 1859. Chonetes Flemingi (†). Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 390. White Permian L. S.: Guadalupe Mountains.
- 1891. Choneles flemings. Keyes, Proc. Acad. Nat. Sci. Phil., p. 247. Lower Coal Measures: Des Moines, Iowa.
- 1892. Chonetes Flemingi. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 15B, fig. 11.
  Coal Measures: Illinois.
- 1894. Chonetes stemingi. Keyes, Mo. Geol. Surv., vol. 5, p. 54, pl. 38, figs. 6a, b. Upper Coal Measures: Kansas City, Missouri.

#### Chonetes verneuilanus Norwood and Pratten.

- 1855. Chonetes Verneuiliana. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 26, pl. 2, figs. 6a-c. Coal Measures: Charboniere, Missouri.
- 1859. Chonetes Verneuiliana. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 26.
  - Upper Coal Measures: Manhattan, Kansas.
- 1861. Chonetes verneuiliana. Newberry, Ives' Colo. Expl. Exped., p. 128.
  Upper Carboniferous: Cherty L. S. on banks of the Colorado River, 100 miles northwest of San Francisco Mountain.
- 1872. Chonetes Verneuiliana. Meek, U. S. Geol. Surv. Nebr., p. 170, pl. 1, figs. 10a, b.
  Unper Coal Messures: Plattsmouth. Nebr.: Kansas: Iowa: Missonri:
  - Upper Coal Measures: Plattsmouth, Nebr.; Kansas; Iowa; Missouri; Illinois.
- 1883. Chonetes Verneuili. Hall, Rep. N. Y. State Geol. for 1882, pl. (16) 47, figs. 20-21.
  Coal Measures: Western States.
- 1884. Chonetes Verneuiliana. White, 13th Rep. Geol. Surv. Ind., p. 128, pl. 25 figs. 7, 8.
  - Coal Measures: Every county in the Coal Measures of Indiana.
- 1892. Chonetes Verneuiliana. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 20, figs. 5, 6.
  Coal Measures: Illinois.
- 1892. Chonetes Verneuilians. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 6, figs. 20, 21.
  - Coal Measures: Illinois.

#### Chonetes verneuilanus var. utahensis Meek.

- 1876. Chonetes rerneuiliana var. utahensis. Meek, Simp. Expl. Gt. Basin Utah, p. 348, pl. 2, figs. 2a-c. Humboldt Mountains.
- Chonetes (species undetermined).
  - 1888. Chonetes sp. Herrick, Bull. Den. Univ., vol. 3, pl. 3, fig. 13; pl. 7, fig. 15; pl. 8, figs. 19, 23.
    - Waverly Group: Licking County, Ohio.

# Chonetes (species undetermined).

1888. Chonetes sp. Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 26, 40. Waverly Group: Cuyahoga Falls, Ohio.

# CHONOPECTUS Hall, 1892.

### Chonopectus fischeri Norwood and Pratten.

1855. Chonetes Fischeri. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 25, pl. 2, fig. 3.

Base of Mountain L.S.: Burlington, Iowa.

1858. Chonetes fischeri. Hall, Geol. Iowa, vol. 1, pt. 2, p. 517, pl. 7, figs. 1a-c. Chemung Group: † Burlington, Iowa.

1869. Chonetes Fischeri. Winchell, Safford's Geol. of Tenn., p. 443.
Shales just above Black Shale: Hickman and Maury counties, Tennessee.

1870. Chonetes Fischeri. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 250. Waverly Group: Tennessee.

1883. Chonetee Fischeri. Hall, Rep. N. Y. State Geol. for 1882, pl. (16) 47, figs. 17, 31.

Waverly Group: Burlington, Iowa.

1892. Chonopectus Fischeri. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 20, figs. 24-27.

Yellow S. S.: Burlington, Iowa.

Waverly Group: Warren, Pennsylvania.

1892. Chonopectus Fischeri. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 15B, figs. 20-23; pl. 16, figs. 17, 31.

Yellow S. S.: Burlington, Iowa.

### OHONOPHYLLUM Edwards and Haime, 1850.

#### Chonophyllum sedaliense White.

1890. Chonophyllum sedaliense. White, Cont. to Pal. No. 8, p. 157, pl. 39, fig. 1a. Top of Chouteau L. S.: Sedalia, Missouri.

1894. Chonophyllum sedaliones. Keyes, Mo. Geol. Surv., vol. 4, p. 116, pl. 14, fig. 9. Chouteau L. S.: Sedalia, Missouri.

### CHRESTOTES Scudder, 1868.

### Chrestotes lapidea Scudder.

1868. Chrestotes lapidea. Scudder, Geol. Surv. Ill., vol. 3, p. 567, fig. 2. Carboniferous: Mazon Creek, Grundy County, Illinois.

1885. Chrestotes lapidea. Soudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 341, pl. 31, fig. 2.

Carboniferous: Mazon Creek, Illinois.

1890. Chrestotes lapidea. Scudder, Foss. Insc. N. A., vol. 1, p. 305, pl. 17, fig. 2. Carboniferous: Mazon Creek, Illinois.

### CIDAROSPONGIA Gurley, 1884.

#### Cidarospongia ella Gurley.

1884. Cidarospongia Ella. Gurley, New Carb. Foss., Bull. No. 2, p. 4. Coal Measures: Near Springfield, Illinois.

### (OLEISTOPORA.)

Cleistopora placenta Keyes. See Leptopora typa. Cleistopora typa Keyes. See Leptopora typa.

### CLEODICTYA Hall, 1884.

### Cleodictya gloriosa Hall.

1884. Cleodictya gloriosa. Hall, 35th Rep. N. Y. State Mus. Nat. Hist., p. 479. Keokuk Group: Crawfordsville, Indiana.

### Cleodictya ? mohri Hall.

1884. Cleodictya? Mohri. Hall, 35th Rep. N. Y. State Mus. Nat. Hist., p. 479. Keokuk Group: Crawfordsville, Indiana.

### (CLIDOPHORUS Hall, 1847.)

Clidophorus occidentalis. See Modiola subelliptica.

Clidophorus pallasi. See Pleurophorus occidentalis.

Clidophorus solenoides. See Solenopsis solenoides.

### CLINOPISTHA Meek and Worthen, 1870.

### Clinopistha radiata Hall.

- 1858. Edmondia? radiata. Hall, Geol. Iowa, vol. 1, pt. 2, p. 716, pl. 29, fig. 3. Coal Measures.
- 1884. Clinopistha radiata. White, 13th Rep. Geol. Surv. Ind., p. 147, pl. 31, figs. 6, 7.
  Upper Coal Measures: Indiana.
- 1887. Climpistha radiata. Herrick, Bull. Den. Univ., vol. 2, p. 34, pl. 3, fig. 11. Coal Measures: Flint Ridge, Ohio.
- 1888. Clinopistha radiata. Keyes, Proc. Acad. Nat. Sci. Phil., p 233. Lower Coal Measures: Des Moines, Iowa.
- 1890. Clinopistha radiata. Worthen, Geol. Surv. Ill., vol. 8, p. 122, pl. 19, fig. 3; pl. 21, fig. 2.
  - Coal Measures: Mercer County, Illinois.
- 1894. Clinopistha radiata. Keyes, Mo. Geol. Surv., vol. 5, p. 124, pl. 46, figs. 11a, b. Lower Coal Measures: Clinton, Missouri.

### Clinopistha radiata var. lævis Meek and Worthen.

1870. Clinopistha radiata var. levis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 44.

Lower Coal Measures: Seaville County, Illinois.

1873. Clinopistha radiata var. levis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 584, pl. 27, fig. 7.

Coal Measures: Fulton County and Springfield, Illinois.

# **CLEIOTHYRIS King, 1850.**

### Cleiothyris clintonensis Swallow.

1863. Spirigera Clintonensis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 89. Second Archimedes L. S.: Chester, Illinois; Ste. Genevieve and Cooper counties, Missouri.

### Cleiothyris crassicardinalis White.

\*1860. Athyris crassicardinalis. White, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 229. Kinderhook: Burlington, Iowa.

### Cleiothyris hirsuta Hall.

- 1856. Spirigera hirsuta. Hall, Trans. Albany Inst., vol. 4, p. 8.
  - St. Louis L. S.: Spergen Hill and Bloomington, Indiana; Alton, Illinois.
- 1882. Athyris hireuta. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 49, pl. 6, figs. 18-21.
  - St. Louis Group: Spergen Hill, Paynter's Hill, and Bloomington, Indiana;
    Alton. Illinois.

### Cleiothyris hirsuta Hall—Continued.

- 1883. Athyris kirsuta. Hall, 12th Rep. Geol. Surv. Ind., p. 328, pl. 29, figs. 18-21.
  St. Louis Group: Alton, Illinois; Spergen Hill, Lanesville, and Bloomington, Indiana.
- 1884. Athyris hireuta. Walcott, Pal. Eureka Dist., p. 222, pl. 18, fig. 5.
  Lower Carboniferous: Eureka District, and at Coal Hill, Pancake Range, Nevada.
- 1895. Cliothyris hireuta. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 46, figs. 25-28.
  - St. Louis L. S.: Bloomington, Indiana.

### Cleiothyris missouriensis Swallow.

1860. Spirigera Missouriensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 650. Coal Measures: Montgomery and Chariton counties, Missouri.

### Cleiothyris obmaxima McChesney.

- 1861. Athyris obmaxima. McChesney, Desc. New Spec. Foss., p. 80.
  Keokuk Limestone: Nauvoo and Warsaw, Illinois: Keokuk Iowa.
- 1874. Spirigera obmaxima. White, Prelim. Rep. Inv. Foss., p. 17.
  Subcarboniferous: Mountain Spring, Old Mormon Road, Nevada, and below Ophir City, Nevada.
- 1877. Spirigera obmaxima. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 92, pl. 5, fig. 12.
  Subcarboniferous: Mountain Spring, Old Mormon Road, Nevada.

# Cleiothyris obvia McChesney.

1861. Athyris obvia. McChesney, Desc. New Spec. Foss., p. 81. Kaskaskia Limestone: Kaskaskia, Illinois.

#### Cleiothyris orbicularis McChesney.

1860. Athyris orbicularis. McChesney, Desc. New Pal. Foss., p. 47. Coal measures: Western States.

# Cleiothyris reflexa Swallow.

1863. Spirigera reflexa. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 88. Warsaw L. S.: Barrett's Station, St. Louis County, Missouri.

#### Cleiothyris roissyi L'Eveille.

- 1858. Terebratula royesii. Marcou, Geol. N. A., p. 51, pl. 6, sigs. 10, 10b. Mountain L. S.: Salt Lake City, Utah; El Paso, Chihuahua; headwaters of Rio Colorado Chiquito.
- 1858. Athyris sublamellosa. Hall, Geol. Iowa, vol. 1, pt. 2, p. 702, pl. 27, figs. 1a-c. Kaskaskia L. S.: Chester, Illinois: Crittenden County, Kentucky.
- 1858. Terebratula plano-sulcata. Marcou, Geol. N. A., p. 52, pl. 6, figs. 8, 8b. Mountain L. S.: Tigeras, New Mexico; Ohio; Indiana; Illinois; Kentucky; Arkansas.
- 1860. Athyris parvirostra. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 451. Keokuk L. S.: Near Warsaw, Illinois.
- 1863. Spirigera pectinifera. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 88. Geode Beds: Keokuk, Iowa.
- 1863. Spirigera Americana. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 89.
  Second Archimedes L. S.: Chester, Illinois; St. Mary's, Missouri.
- 1866. Athyris planosulcata?. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 254, pl. 18, figs. 8a-d.
  Keokuk Group: Near Warsaw, Illinois.
- 1874. Athyris sublamellosa. Derby, Bull. Cornell Univ. (Science), vol. 1, No. 2, p. 10, pl. 2, figs. 9-12; pl. 3, figs. 15, 21, 29; pl. 6, fig. 16; pl. 9, figs. 5, 6. Coal Measures: Bomjardim and Itaitúba, Brazil.

# Cleiothyris roissyi L'Eveille—Continued.

1877. Spirigera planosulcata. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 143, pl. 10, figs. 5a-d.

Carboniferous: Santa Fé, New Mexico; Rush Creek, Lake County, Colorado.

1877. Athyris planosulcata. † Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 257, pl. 18, figs. 8a-d.

Lower Carboniferous L. S. (Waverly?): Cottonwood Divide, 800 feet east of Reed & Benson's Mine, Wahsatch Range, Utah.

1877. Athyris Roissyi. Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 82, pl. 9, figs. 3-3b. Carboniferous, L. S.: Ruby Group; Wachoe Mountains; Mahogany Peak; Egan Range, Nevada.

1894. Athyris sublamellosa. Keyes, Mo. Geol. Surv., vol. 5, p. 92. Kaskaskia L. S.: Ste. Mary, Missouri.

1894. Cliothyris Roysii. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 35, figs. 9, 10.

Keokuk Group: Keokuk, Iowa.

Chester L. S.: Jackson County, Kentucky.

1895. Cliothyris Roysii. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 46, figs. 23, 24. Keokuk Group: Keokuk, Iowa. Chester L. S.: Jackson County, Kentucky.

### Cleiothyris squamosa Worthen.

1884. Athyris squamosa. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 24. Oolitic beds of St. Louis L. S.: Mouroe County, Illinois.

1890. Athyris squamosa. Worthen, Geol. Surv. Ill., vol. 8, p. 103, pl. 11, fig. 2. St. Louis Oolitic L. S.: Monroe County, Illinois.

### CLISIOPHYLLUM Dana, 1848.

### Clisiophyllum gabbi Meek.

1864. Clisiophyllum Gabbi. Meek, Pal. Cal., vol. 1, p. 8. pl. 1, figs. 1-1b. Carboniferous: Base's Ranch, Shasta County, California.

### Clisiophyllum tumulus Salter.

1855. Clisiophyllum Tumulus. Salter, Belcher's "Last of the Arctic Voyagers," p. 383, pl. 36, fig. 6.

Carboniferous: Depot Point.

### CODASTER McCoy, 1849.

#### Codaster blairi Miller and Gurley.

1895. Codaster blairi. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 86, pl. 5, figs. 20-22.

Chouteau L. S.: Near Sedalia, Missouri.

### Codaster gracillimus Rowley and Hare.

1891. Codaster gracillimus. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 99, pl. 2, figs. 6, 7.
Lower Burlington L. S.: Louisiana, Missouri.

### Codaster grandis Rowley and Hare.

1891. Codaster grandis. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 99, pl. 2, fig. 8.

Upper Burlington Chert: Louisiana, Missouri.

### Codaster gratiosus Miller.

1880. Codaster gratiosus. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 2, p. 257, pl. 15, figs. 5, 5a.

Keokuk Group: New Bloomfield, Missouri.

### Codaster jessiese Miller and Gurley.

1896. Codaster jessiea. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 89, pl. 5, figs. 20–22.

Chouteau L. S.: Sedalia, Missouri.

Codaster whitei. See Orophocrinus whitei.

### (CODONITES Meek and Worthen, 1869.)

Codonites campanulatus. See Orophocrinus campanulatus.

Codonites gracilis. See Orophocrinus gracilis.

Codonites inopinatus. See Orophocrinus inopinatus.

Codonites stelliformis. See Orophocrinus stelliformis.

# CŒLIOCRINUS White, 1893.

#### Coliocrinus cariniferus Worthen.

1873. Zeacrinus cariniferus. Worthen, Geol. Surv. Ill., vol. 5, p. 535, pl. 20, fig. 4. St. Louis L. S.: Near Huntsville, Alabama.

#### Coliocrinus dilatatus Hall.

Poteriocrinus dilatatus. Hall, Desc. New Spec. Crin., p. 6.
 Burlington, L. S.

1861. Poteriocrimus dilatatus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 300. Burlington L. S.: Burlington, Iowa.

1893. Calicorinus dilatatus. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 33, pl. 3, fig. 18.

Burlington L. S.: Burlington, Iowa.

#### Coliocrinus lyra Meek and Worthen.

1869. Zeacrinus lyra. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 152. Upper Burlington L. S.: Burlington, Iowa.

1873. Zeacrinus lyra. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 432, pl. 1, fig. 11.

Burlington L. S.: Burlington, Iowa.

#### Cœliocrinus subspinosus White.

1862. Caliocrinus subspinosus. White, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 501. Burlington L. S.: Burlington, Iowa.

### Cœliocrinus ventricosus Hall.

1861. Poteriocrinus ventricosus. Hall, Desc. New Crin., p. 6. Burlington L. S.

1861. Poteriocrinus ventricosus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 301. Burlington, L. S.: Burlington, Iowa.

# CŒLOCONUS Ulrich, 1890.

### Cœloconus granosus Ulrich.

1890. Cæloconus granosus. Illrich, Geol. Surv. Ill., vol. 8, p. 665, pl. 72, figs. 3-3b. Chester Group: Near Anna, Illinois.

### Cœloconus rhombicus Ulrich.

1890. Caloconus rhombicus. Ulrich, Geol. Surv. Ill., vol. 8, p. 664, pl. 72, figs. 4-4c. St. Louis Group: Fountain Creek, Monroe County, Illinois.

(OŒLOCRINUS Meek and Worthen, 1865.)

Calocrinus concavus. See Aorocrinus concavus.

COLEOLUS Hall, 1879.

#### Coleolus herzeri Hall.

1888. Coleolus Herzeri. Hall, Pal. N. Y., vol. 5, pt. 2, Supp. p. 7, pl. 114, fig. 29. Waverly Group: Medina County, Ohio.

COLOCERAS Hyatt, 1893.

### Coloceras globatus Meek and Worthen.

1866. Nautilus globatus? Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 305, pl. 24, figs. 5a, b.

Chester Group: Chester, Illinois.

1893. Nautilus globatus. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 453.

# Coloceras globulare Hyatt.

1893. Coloceras globulare. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 452, figs. 25-27.

Carboniferous: Military Crossing, Baylor County, Texas.

# COLPOCARIS Meek, 1872.

# Colpocaris bradleyi Meek.

1872. Ceratiocaris (Colpocaris) bradleyi. Meek, Proc. Acad. Nat. Sci. Phil. (for 1871), p. 332.

Base of Waverly Group: Danville, Kentucky.

1875. Ceratiocaris (Colpocaris) Bradleyi. Meek, Pal. Ohio, vol. 2, p. 318, pl. 18, figs. 6a-e.

Waverly Group: Danville, Kentucky.

### Colpocaris chesterensis Worthen.

1884. Colpocaris chesterensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 3. Lower Chester L. S.: Chester, Illinois.

1890. Colpocaris chesterensis. Worthen, Geol. Surv. Ill., vol. 8, p. 153, pl. 28, fig. 2. Chester L. S.: Chester, Illinois.

1894. Colpocaris chesterensis. Keyes, Mo. Geol. Surv., vol. 4, p. 239. Kaskaskia L. S.: Chester, Illinois.

# Colpocaris elytroides Meek.

1872. Ceratiocaris (Colpocaris) elytroides. Meek, Proc. Acad. Nat. Sci. Phil. (for 1871), p. 334.

Base of Waverly Group: Danville, Kentucky.

1875. Ceratiocaris (Colpocaris) elytroides. Meek, Pal. Ohio, vol. 2, p. 319, pl. 18, figs. 5a-c.

Waverly Group: Danville, Kentucky.

### COMPSASTER Worthen and Miller, 1883.

#### Compsaster formosus Worthen and Miller.

1883. Compsaster formosus. Worthen and Miller, Geol. Surv. Ill., vol. 7, p. 327, pl. 31, figs. 2a, b.

Chester L. S.: Okaw bluffs, between Chester and Kaskaskia, Randolph County, Illinois.

### CONCHIDIUM Linné, 1753.

# Conchidium salinensis Swallow.

1860. Pentamerus Salinensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 652.

Base of Chemung: Moniteau County, Missouri.

# CONOCARDIUM Bronn, 1835.

#### Conocardium acadianum Dawson.

1868. Conocardium Acadianum. Dawson, Acad. Geol., p. 304, fig. 110. Carboniferous L. S.: Windsor, Nova Scotia.

# Conocardium aliforme Sowerby.

- 1829. Cardium aliforme. Sowerby, Min. Conch., vol. 6, p. 100, tab. 552, fig. 2.
- 1897. Conocardium aliforme. Smith, Proc. Am. Phil. Soc., vol. 35, p. 37, pl. 22, figs. 1, 2.

Lower Coal Measures: Conway County, Arkansas.

### Conocardium alternistriatum Herrick.

1888. Conocardium alternistriatum. Herrick, Bull. Den. Univ., vol. 4, p. 42, pl. 11, fig. 24; pl. 5, fig. 7 f.

Waverly Group: Bagdad and Burbank, Ohio.

1889. Conocardium (cf. alternistriatum). Herrick, Am. Geol., vol. 3, pl. 3, fig. 7. Waverly Group: Moot's Run, Ohio.

1891. Conocardium alternistriatum. Herrick, Bull. Geol. Soc. Am., vol. 2, p. 45, pl. 1, figs. 1-4.

Waverly Group (Cuyahoga Division): Wooster, Ohio.

### Conocardium ? bovipedale Winchell.

1862. Conocardium? bovipedale. Winchell, Proc. Acad. Nat. Sci. Phil., p. 420.

Marshall Group: Marshall, Michigan.

#### Conocardium carinatum Hall.

1856. Conocardium carinatum. Hall, Trans. Alb. Inst., vol. 4, p. 14.
St. Louis L. S.: Bloomington and Spergen Hill, Indiana.

1882. Conocardium carinatum. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 59, pl. 7, figs. 18, 19.

St. Louis Group: Spergen Hill and Bloomington, Indiana.

1883. Conocardium carinatum. Hall, 12th Rep. Geol. Surv. Ind., p. 345, pl. 30, figs. 18, 19.

St. Louis Group: Spergen Hill, Lanesville, and Bloomington, Indiana.

### Conocardium catastomum Hall.

1856. Conocardium catastomum. Hall, Trans. Albany Inst., vol. 4, p. 13.
St. Louis L. S.: Spergen Hill, Indiana.

1882. Conocardium catastomum. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 58, pl. 7, figs. 15-17a.

St. Louis Group: Spergen Hill, Indiana.

1883. Conocardium catastomum. Hall, 12th Rep. Geol. Surv. Ind., p. 344, pl. 30, figs. 15-17.

St. Louis Group: Spergen Hill and Lanesville, Indiana.

#### Conocardium cuneatum Hall.

1856. Conocardium cuneatum. Hall, Trans. Albany Inst., vol. 4, p. 14.
St. Louis L. S.: Bloomington and Spergen Hill, Indiana.

1882. Conocardium cuneatum. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 60, pl. 7, figs. 24-26.

St. Louis Group: Spergen Hill and Bloomington, Indiana.

1883. Conocardium cuneatum. Hall, 12th Rep. Geol. Surv. Ind., p. 345, pl. 30, figs. 24-26.

St. Louis Group: Spergen Hill, Lanesville, and Bloomington, Indiana.

### Conocardium equilaterale Hall.

1856. Conocardium equilaterale. Hall, Trans. Albany Inst., vol. 4, p. 16. St. Louis L. S.: Spergen Hill, Indiana.

1882. Conocardium equilaterale. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 62. St. Louis Group.

### Conocardium equilaterale Hall—Continued.

1883. Conocardium equilaterale. Hall, 12th Rep. Geol. Surv. Ind., p. 348. St. Louis Group: Spergen Hill, Indiana.

#### Conocardium indianense Miller.

1891. Conocardium indianense. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 94, pl. 20, fig. 10.

Keokuk Group: Crawfordsville, Indiana.

1892. Conocardium indianense. Miller, 17th Rep. Geol. Surv. Ind., p. 704, pl. 20, fig. 10.

Keokuk Group: Crawfordsville, Indiana.

#### Conocardium meekanum Hall.

1856. Conocardium Meekanum. Hall, Trans. Albany Inst., vol. 4, p. 15. St. Louis L. S.: Alton, Illinois.

1882. Conocardium Meekanum. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 61, pl. 7, figs. 21-23.
St. Louis Group: Alton, Illinois.

1883. Conocardium meekanum. Hall, 12th Rep. Geol. Surv. Ind., p. 347, pl. 30, figs. 21-23.

# St. Louis Group: Alton, Illinois. Conocardium napoleonense Winchell.

1862. Cardium Napoleonese. Winchell, Proc. Acad. Nat. Sci. Phil., p. 419.

Marshal Group: Marshall, Battle Creek, and near Napoleon, Michigan.

### Conocardium obliquum Meek and Worthen.

1865. Conocardium obliquum. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 249.

Coal Measures: Wabash Cut-off, Posey County, Indiana.

1875. Conocardium obliquum. Meek and Worthen, Geol. Surv. Ill., vol. 6, p. 529, pl. 33, fig. 4.

Coal Measures: Wabash cut-off, Posey County, Indiana.

#### Conocardium parrishi Worthen.

1890. Conocardium parrishi. Worthen, Geol. Surv. Ill., vol. 8, p. 112, pl. 20, fig. 7. Upper Coal Measures (colite): Near Kansas City, Missouri.

1894. Conocardium parrishi. Keyes, Mo. Geol. Surv., vol. 5, p. 124, pl. 46, figs. 6a, b. Upper Coal Measures: Kansas City, Missouri.

#### Conocardium prattenanum Hall.

1856. Conocardium Prattenanum. Hall, Trans. Albany Inst., vol. 4, p. 15. St. Louis L. S.: Alton, Illinois.

1882. Conocardium Prattenanum. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 61, pl. 7, fig. 20.

St. Louis Group: Alton, Illinois.

1883. Conocardium prattenanum. Hall, 12th Rep. Geol. Surv. Ind., p. 346, pl. 30, fig. 20.

St. Louis Group: Alton, Illinois.

### Conocardium pulchellum White and Whitfield.

1862. Conocardium pulchellum. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 299.

Chemung Group: Burlington, Iowa.

1870. Conocardium pulchellum. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 256. Waverly Group: Newark, Ohio.

1888. Conocardium pulchellum. Herrick, Bull. Den. Univ., vol. 3, p. 97, pl. 1, fig. 12; pl. 7, figs. 39, 40 f.
Waverly Group: Licking County, Ohio.

# Conocardium (species undetermined).

- 1868. Conocardium. Dawson, Acad. Geol., p. 305.
  - Carboniferous L. S.: Stewiacke, Nova Scotia.
- 1877. Conocardium —— (f). White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 94. Subcarboniferous: Below Ophir City, Utah.
- 1888. Conocardium sp. f Herrick, Bull. Den. Univ., vol. 3, pl. 7, fig. 41. Waverly Group: Licking County, Ohio.
- 1888. Conocardium sp. Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 44. Waverly Group: Rushville, Ohio.
- 1894. Chonocardium sp. Keyes, Mo. Geol. Surv., vol. 5, p. 124. Base of Burlington L. S.: Louisiana, Missouri.

### CONOPTERIUM Winchell, 1865.

### Conopterium effusum Winchell.

- 1865. Conopterium effusum. Winchell, Proc. Acad. Nat. Sci. Phil., p. 111. Lithographic L. S.: Clarksville, Missouri.
- 1894. Conopterium effusum. Keyes, Mo. Geol. Surv., vol. 4, p. 118, pl. 14, fig. 10. Kinderhook L. S.: Clarksville and Louisiana, Missouri.

### CONULARIA Miller, 1821.

### Conularia blairi Miller and Gurley.

1894. Conslaria blairi. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 73, pl. 7, figs. 14, 15.
Chouteau L. S.: Sedalia, Missouri.

### Conularia byblis White.

- 1862. Conularia byblis. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 22. Chemung Group: Burlington, Iowa.
- 1869. Conularia byblis. Winchell, Safford's Geol. of Tenn., p. 444.
  Shales just above black shales: Hickman and Maury counties, Tennessee.
- 1870. Conularia byblis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 257. Waverly Group: Hickman County, Tennessee.
- 1888. Conularia byblis. Herrick, Bull. Den. Univ., vol. 3, p. 95. Waverly Group: Licking County, Ohio.

### Conularia chesterensis Worthen.

- 1883. Conularia Chesterensis. Worthen, Geol. Surv. Ill., vol. 7, p. 325. Chester, L. S.: Chester, Illinois.
- 1890. Conularia chesterensis. Worthen, Geol. Surv. Ill., vol. 8, p. 134, pl. 11, figs. 9, 9a.
  Chester, L. S.: Chester, Illinois.

### Conularia crawfordsvillensis Owen.

1862. Conularia Crawfordsvillensis. Owen, Geol. Reconn. Ind., p. 364, fig. 9. Carboniferous: Crawfordsville, Indiana.

### Conularia crustula White.

- 1880. Conularia crustula. White, Cont. to Pal., No. 8, p. 170, pl. 42, fig. 4a.
  Coal Measures: Kansas City, Missouri; near Taos, New Mexico.
- 1881. Conularia orustula. White, U. S. Geog. Surv. W. 100th Merid., vol. 3, Supp., Appendix, p. xxviii, pl. 3, figs. 4a, b. Carboniferous: Near Taos, New Mexico.
- 1894. Conularia crustula. Keyes, Mo. Geol. Surv., vol. 5, p. 219, pl. 35, fig. 2. Upper Coal Measures: Kansas City, Missouri.
- 1897. Conularia conf. crustula. Smith, Proc. Am. Phil. Soc., vol. 35, p. 41.
  Coal Measures: Scott County, Arkansas.

Conularia gracilis. Name preoccupied. See Conularia (species undetermined).

### Conularia gratiosa Miller and Gurley.

1894. Conularia gratiosa. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 74, pl. 8, fig. 1.

St. Louis Group: Spergen Hill, Indiana.

### Conularia greenci Miller and Gurley.

1896. Conularia greenei. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 27, pl. 3, fig. 3.

Keokuk Group: Edwardsville, Indiana.

#### Conularia intertexta Miller.

1892. Conularia intertexta. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 63, pl. 10, fig. 4.

Keokuk Group: West Point, Indiana.

1894. Conularia intertexta. Miller, 18th Rep. Geol. Surv. Ind., p. 317, pl. 10, fig. 4. Keokuk Group: West Point, Indiana.

#### Conularia marionensis Swallow.

1860. Conularia Marionensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 656. Upper Hamilton Shales: Marion County and Hannibal, Missouri.

1894. Conularia marionensis. Keyes, Mo. Geol. Surv., vol. 5, p. 217. Hannibal Shales: Hannibal, Missouri.

#### Conularia micronema Meek.

1871. Conularia micronema. Meek, Proc. Acad. Nat. Sci. Phil., p. 84.
Waverly Group: Sciotoville, Ohio.

1875. Conularia micronema. Meek, Pal. Ohio, vol. 2, p. 316, pl. 18, figs. 1a-d. Waverly Group: Sciotoville, Ohio.

1888. Conularia micronema. Herrick, Bull. Den. Univ., vol. 3, p. 94, pl. 2, fig. 19. Waverly Group: Licking County, Ohio.

1888. Conularia micronoma. Herrick, Bull. Den. Univ., vol. 4, p. 49, pl. 8, fig. 4. Waverly Group: Ohio.

1895. Conularia micronema. Herrick, Geol. Surv. Ohio, vol. 7, pl. 19, fig. 4. Kinderhook, Ohio.

#### Conularia missouriensis Swallow.

1860. Conularia Missouriensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 657. Carboniferous L. S.: Cooper County, Missouri.

1873. Conularia Missouriensis? Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 541, pl. 22, fig. 5.

Warsaw beds: Warsaw, Illinois.

1881. Conularia missouriensis? White, 2d Ann. Rep. Dep. Stat. and Geol. Ind., p. 513, pl. 6, fig. 4.
St. Louis Group: Ellettsville, Indiana.

1884. Conularia Missouriensis? Walcott, Pal. Eureka Dist., p. 264, pl. 23, fig. 4. Lower Carboniferous: White Pine Mining District, Nevada.

1890. Conularia missouriensis. Calvin, Am. Geol., vol. 5, p. 207.

St. Louis L. S.: Brown County, Illinois.

1894. Conularia missouriensis?. Keyes, Mo. Geol. Surv., vol. 5, p. 218, pl. 35, figs. 1a, b.

Keokuk L. S.: Warsaw, Illinois.

St. Louis L. S.: St. Louis, Missouri.

# Conularia multicostata Meek and Worthen.

1865. Conularia multicostata. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 252.

Waverly S. S.: Richfield, Summit County, Ohio.

### Conularia newberryi Winchell.

- 1865. Conularia Newberryi. Winchell, Proc. Acad. Nat. Sci. Phil., p. 130. Marshall Group: Cuyahoga Falls, Ohio.
- 1870. Conularia Newberryi. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 258. Waverly Group: Sciotoville, Ohio.
- 1875. Conularia Newberryi. Meek, Pal. Ohio, vol. 2, p. 316, pl. 18, figs. 2a, b. Waverly Group: Loudonville, Ohio.
- 1887. Conularia newberryi (†) Herrick, Bull. Den. Univ., vol. 2, p. 146, pl. 14, fig. 14.

Coal Measures: Flint Ridge, Ohio.

- 1888. Conularia newberryi. Herrick, Bull. Den. Univ., vol. 3, p. 93, pl. 6, fig. 13; pl. 8, fig. 9; pl. 2, fig. 18 f
  - Waverly Group: Licking County, Ohio.
- 1888. Conularia newberryi. Herrick, Bull. Den. Univ., vol. 4, pl. 8, fig. 5; pl. 10, fig. 27.

Waverly Group: Cuyahoga Falls, Ohio.

1895. Conularia newberryi. Herrick, Geol. Surv. Ohio, vol. 7, pl. 19, fig. 5. Kinderhook Group: Ohio.

#### Conularia osagensis Swallow.

- 1863. Conularia Osagensis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 98. Achimedes L. S.: Near Boonville, Missouri.
- 1894. Conularia osageneis. Keyes, Mo. Geol. Surv., vol. 5, p. 218. Keokuk L. S.: Boonville, Missouri.

### Conularia planocostata Dawson.

1868. Conularia planicostata. Dawson, Acad. Geol., p. 307, fig. 117.

Carboniferous L. S.: Irish Cove, Cape Breton, Windsor, and Shubenacadie, Nova Scotia.

#### Conularia rosperi Miller and Gurley.

1896. Conularia roceperi. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 26, pl. 3, figs. 1, 2.

Coal Measures: Luzerne County, Pennsylvania.

### Conularia sampsoni Miller.

1891. Conularia sampsoni. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 80, pl. 14. figs. 11. 12.

Chouteau L. S.: Sedalia, Missouri.

1892. Conularia sampsoni. Miller, 17th Rep. Geol. Surv. Ind., p. 690, pl. 14, figs. 11, 12.

Chouteau L. S.: Sedalia, Missouri.

#### Conularia sedaliensis Miller and Gurley.

1896. Conularia sedaliensis. Miller and Gurley, Bull. No. 11, Ill., State Mus. Nat. Hist., p. 28, pl. 3, figs. 4, 5.

Burlington Group: Sedalia, Missouri.

### Conularia spergenensis Miller and Gurley.

1894. Conularia spergenensis. Miller and Gurley, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 74, pl. 8, fig. 2.

St. Louis Group: Spergen Hill, Indiana.

#### Conularia subcarbonaria Meek and Worthen.

1865. Conularia subcarbonaria. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 253.

Keokuk Group: Warsaw, Illinois.

1873. Conularia subcarbonaria. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 520, pl. 19, fig. 4.

Keokuk Group: Hamilton, Illinois.

# Conularia subcarbonaria Meek and Worthen-Continued.

1894. Conularia subcarbonaria. Keyes, Mo. Geol. Surv., vol. 5, p. 218 Keokuk L. S.: Wayland, Missouri.

#### Conularia subulata Hall.

- 1856. Conularia subulata. Hall, Trans. Albany Inst., vol. 4, p. 32.
  St. Louis L. S.: Alton, Illinois.
- 1882. Conularia subulata. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 91, pl. 8, fig. 3.
  - St. Louis Group: Alton, Ilinois.
- 1883. Conularia subulata. Hall, 12th Rep. Geol. Surv. Ind., p. 372, pl. 31, fig. 3. St. Louis Group: Alton, Illinois.
- 1894. Conularia subulata. Keyes, Mo. Geol. Surv., vol. 5, p. 218. St. Louis L. S.: St. Louis, Missouri.

### Conularia triplicata Swallow.

- 1860. Conularia triplicata. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 657.
  Upper Hamilton Shales: Marion County, Missouri.
- 1894. Conularia triplicata. Keyes, Mo. Geol. Surv., vol. 5, p. 217. Hannibal Shales: Marion County, Missouri.

#### Conularia verneuilana Emmons.

\*1846. Conularia vernouilana. Emmons, Am. Quart. Jour. Agr. and Sci., vol. 4, p. 330.

Subcarboniferous.

#### Conularia victa White.

- 1862. Conularia victa. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 22. Upper Burlington L. S.: Burlington, Iowa.
- 1888. Conularia victa? Herrick, Bull. Den. Univ., vol. 4, p. 47, pl. 8, fig. 3.
  Waverly Group: Newark, Rushville, and near Loudonville, Ohio.
- 1895. Conularia victa. Herrick, Geol. Surv. Ohio, vol. 7, pl. 19, fig. 3. Burlington Group: Newark, Ohio.

### Conularia whitii Meek and Worthen.

1865. Conularia Whitei. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 253. Waverly S. S.: Richfield, Ohio.

# Conularia (species undetermined).

- 1888. Conularia newberryi? Herrick, Bull, Den. Univ., vol. 3, p. 106, pl. 6, figs. 13, 13a, 17.
  - Waverly Group: Licking County, Ohio.
  - 1888. Conularia gracilis. Herrick, Bull. Den. Univ., vol. 4, p. 48, pl. 8, fig. 2. (Not C. gracilis Hall, 1847.)

Waverly Group: Moot's Run, Alexandria, and near Loudonville, Ohio.

1895. Conularia gracilis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 19, fig. 2. Cuyahoga Shale: Licking County, Ohio.

# CORNULITES Schlotheim, 1820.

#### Cornulites carbonarius Gurley.

1883. Cornulites carbonarius. Gurley, New Carb. Foss., Bull. No. 1, p. 8. Kinderhook Group: Pike County, Missouri.

# COSCINIUM Keyserling, 1846.

#### Coscinium asteria Prout.

- 1860. Coscineum asteria. Prout. Trans. St. Louis Acad. Sci., vol. 1, p. 574. Keokuk L. S.: Warsaw, Illinois.
- 1866. Coscinium asteria. Prout. Geol. Surv. Ill., vol. 2, p. 416, pl. 22, figs. 7, 7a. Keokuk Group: Warsaw, Illinois.

Coscinium elegans. See Glyptopora elegans.

### Coscinium escharense Prout.

1860. Coscinium escharense. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 574. Keokuk L. S.: Warsaw, Illinois.

1866. Coscinium escharense. Prout, Geol. Surv. Ill., vol. 2, p. 416, pl. 22, figs. 8, 8a. Keokuk Group: Warsaw, Illinois.

Coscinium keyserlingi. See Glyptopora keyserlingi.

#### Coscinium latum Ulrich.

1890. Coscinium latum. Ulrich, Geol. Surv. Ill., vol. 8, p. 497, pl. 76, figs. 7-7b. Burlington, L. S.: Calhoun County, Illinois; Quincy, Illinois; Burlington, Iowa.

1894. Coscinium ? latum. Keyes, Mo. Geol. Surv., vol. 5, p. 18.

Burlington L. S.: (?) Hannibal, Missouri; Burlington, Iowa; Quincy,
Illinois.

Coscinium michelini. See Glyptopora michelinia.

Coscinium plumosum. See Glyptopora plumosa.

Coscinium sagenella. See Glyptopora sagenella.

### Coscinium tuberculatum Prout.

1860. Coscinium tuberculatum. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 573. Keokuk L. S.: Warsaw, Illinois.

1866. Coscinium tuberculatum. Prout, Geol. Surv. Ill., vol. 2, p. 415, pl. 22, fig. 6. Keokuk Group: Warsaw, Illinois.

Coscinium wortheni. See Glyptopora keyserlingi.

(COTYLEDONOCRINUS Lyon and Casseday, 1860.)

Cotyledonocrinus pentalobus. See Dichocrinus pentalobus.

# CRANIA Retzius, 1781.

Crania blairi. See Crania rowleyi.

Crania carbonaria. See Crania modesta.

### Crania chesterensis Miller and Gurley.

1897. Crania chesterensis. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 47, pl. 3, figs. 24-26.

Kaskaskia Group: Chester, Illinois.

Crania hamiltoniæ. See Craniella hamiltoniæ.

### Crania lævis Keves.

1894. Crania lævis. Keyes, Mo. Geol. Surv., vol. 5, p. 40.

Chonteau L. S.: Louisiana, Missouri.

Burlington L. S.: Louisiana, Missouri.

# Crania modesta White and St. John.

1868. Crania modesta. White and St. John, Trans. Chicago Acad. Sci., vol. 1, p. 118. Upper Coal Measures: Fremont County, Iowa.

1882. Crania carbonaria. Whitfield, Ann. N. Y. Acad. Sci., vol. 2, p. 229.
Coal Measures: Carbon Hill, Hocking County, Ohio.

1884. Crania modesta. White, 13th Rep. Geol. Surv. Ind., p. 121, pl. 35, fig. 9; pl. 36, fig. 5.

Coal Measures: Eugene and Newport, Vermilion County, and Merom, Sullivan County, Indiana.

Bull, 153----13

### Crania modesta White and St. John-Continued.

1891. Crania carbonaria. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 599, pl. 15, figs. 11, 12.

Coal Measures: Carbon Hill, Hocking County, Ohio.

1895. Crania carbonaria. Whitfield, Geol. Surv. Ohio, vol. 7, p. 484, pl. 11, figs.

Coal Measures: Carbon Hill, Hocking County, Ohio.

### Crania permiana Shumard.

1859. Crania Permiana. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 395. White Permian L. S.: Guadalupe Mountains.

### Crania reposita White.

1862. Crania reposita. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 30. Burlington L. S.

### Crania rowleyi Gurley.

1883. Crania Rowleyi. Gurley, New Carb. Foss., Bull. No. 1, p. 3. Kinderhook Group: Pike County, Missouri.

1892. Crania Rowleyi. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 4H, fig. 13. Chouteau L. S.: Pike County, Missouri.

1892. Crania blairi. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 56, pl. 9, figs. 5, 6.

Chouteau L. S.: Sedalia, Missouri.

1894. Crania blairi. Miller, 18th Rep. Geol. Surv. Ind., p. 310, pl. 9, figs. 5, 6. Chouteau L. S.: Sedalia, Missouri.

### Crania (species undetermined).

1868. Crania. Dawson, Acad. Geol., p. 301. Carboniferous L. S.: Windsor, Nova Scotia.

### CRANIELLA Œhlert, 1888.

#### Craniella hamiltoniæ Hall.

1888. Crania hamiltonia. Herrick, Bull. Den. Univ., vol. 3, p. 31, pl. 12, fig. 10. Waverly Group: Licking County, Ohio.

# CRENIPECTEN Hall, 1883.

### Crenipecten cancellatus Herrick.

1888. Aviculopecten (Lyriopecten?) cancellatus. Herrick, Bull. Den. Univ., vol. 3, p. 54, pl. 12, fig. 7.

Waverly Group: Licking County, Ohio.

1888. Crenipeoten cancellatus. Herrick, Bull. Den. Univ., vol. 4, p. 34, pl. 5, fig. 3; pl. 11, fig. 25.

Waverly Group: Moot's Run, Licking County, Ohio.

1889. Crenipecten cancellatus. Herrick, Am. Gool., vol. 3, pl. 3, fig. 3. 1895. Crenipecten cancellatus. Herrick, Gool. Surv. Ohio, vol. 7, pl. 22, fig. 14. Cuyahoga Shale: Moot's Run and northern Ohio.

# Crenipecten caroli. See Aviculopecten caroli.

Crenipecten cooperi. See Aviculopecten cooperi.

Crenipecten crenistriatus. See Aviculopecten crenistriatus.

### Crenipecten foerstii Herrick.

1887. Crenipecten Foerstii. Herrick, Bull. Den. Univ., vol. 2, p. 28, pl. 3, figs. 9, 9a. Coal Measures: Flint Ridge, Ohio.

1888. Crenipecten (foerstii?). Herrick, Bull. Den. Univ., vol. 3, pl. 12, fig. 19. Waverly Group: Licking County, Ohio.

Crenipecten granvillensis. See Aviculopecten granvillensis.

# Crenipecten hallanus Walcott.

1884. Crenipecten Hallanus. Walcott, Pal. Eureka Dist., p. 231, pl. 8, figs. 7-7c. Lower Carboniferous: Eureka District, Nevada.

### Crenipecten senilis Herrick.

1888. Crenipecten senilis. Herrick, Bull. Den. Univ., vol. 3, p. 54, pl. 3, fig. 1. Waverly Group: Licking County, Ohio.

### Crenipecten subcardiformis Herrick.

1888. Cronipocton sub-cardiformis. Herrick, Bull. Den. Univ., vol. 3, p. 53, pl. 7, figs. 4, 5.

Waverly Group: Licking County, Ohio.

### Crenipecten winchelli Meek.

1875. Aviculopecton Winchelli. Meek, Pal. Ohio, vol. 2, p. 296, pl. 15, figs. 5a, b. Waverly Group: Newark, Ohio.

1884. Crenipecten Winchelli. Hall, Rep. N. Y. State Geol. for 1881, pl. 1, figs. 4-5. Waverly Group: Newark Ohio.

1884. Crenipecten Winchelli. Hall, Pal. N. Y., vol. 5, pt. 1, p. 89, pl. 9, figs. 1, 2, 4, 25-30.

Waverly S. S.: Newark, Ohio.

1886. Ariculopeoten Winchelli. Heilprin, 2d Geol. Surv. Penn., Ann. Rep. 1885, p. 453, fig. 6b; p. 442, fig. 6; p. 444, fig. 6a.

Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.

1886. Aviculopecten Winchelli. Heilprin, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 269, fig. 6a; p. 270, fig. 6.

Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.

1888. Ariculopecten winchelli. Herrick, Bull. Den. Univ., vol. 3, pl. 1, fig. 18; pl. 6, fig. 12; pl. 10, fig. 7.

Waverly Group: Licking County, Ohio.

#### Crenipecten (species undetermined).

1888. Crenipecten sp. Herrick, Bull. Den. Univ., vol. 3, pl. 7, fig. 13.

Waverly Group: Licking County, Ohio.

1888. Crenipecten. Herrick, Bull. Den. Univ., vol. 3, pl. 12, fig. 21.

Waverly Group: Licking County, Ohio.

1888. Crenipecten sp. Herrick, Bull. Den. Univ., vol. 4, pl. 10, figs. 8, 9. Waverly Group: Cuyahoga Falls, Ohio.

### CROMYOCRINUS Trautschold, 1867.

Cromyocrinus buttsi. See Ulocrinus buttsi.

### Cromyocrinus globosus Worthen.

1873. Agassizocrinus globosus. Worthen, Geol. Surv. Ill., vol. 5, p. 557, pl. 21, fig. 12.

Chester Group: Chester, Illinois.

1894. Cromyocrinus globosus. Keyes, Mo. Geol. Surv., vol. 4, p. 216. Kaskaskia L. S.: Chester, Illinois.

Cromyocrinus gracilis. See Eupachycrinus gracilis.

### Cromyocrinus hemisphericus Worthen.

1882. Agassizocrinus hemisphericus. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 37.

Chester L. S.: Randolph County, Illinois.

1883. Agassizocrinus hemisphericus. Worthen, Geol. Surv. III., vol. 7, p. 316, pl. 29, fig. 7.

Chester L. S.: Randolph County, Illinois.

### Cromyocrinus kansasensis. See Ulocrinus kansasensis.

### Cromyocrinus papillatus Worthen.

- 1882. Agassizocrinus papillatus. Worthen, Bull. No. 1, Ill. State Mus Nat. Hist., p. 36.
  - Chester L. S.: Monroe County, Illinois.
- 1883. Agassizocrinus papillatus. Worthen, Geol. Surv. Ill., vol. 7, p. 315, pl. 29, fig. 17.
  - Chester L. S.: Monroe County, Illinois.

### Cromyocrinus sangamonensis Meek and Worthen.

- 1860. Cyathocrinus ? Sangamonensis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 393.
  - Upper Coal Measures: Sugar Creek, Sangamon County, Illinois.
- 1866. Cyathocrinus 7 sangamonensis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 310, pl. 26, figs. 1a, b.
  - Coal Measures: Sugar Creek, Sangamon County, Illinois.

### CRYPTACANTHIA White and St. John, 1867.

### Cryptacanthia compacta White and St. John.

- 1868. Waldheimia? compacta. White and St. John, Trans. Chicago Acad. Sci., vol. 1, p. 119, figs. 3a-c.
  - Upper Coal Measures: Madison County, Iowa.
- 1894. Cryptacanthia compacta. Hall and Clarke, Int. to Study of Brach., pt. 2, p. 867 (119), fig. 508.
- 1894. Waldheimia? (Cryptacanthia) compacta. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, p. 301, fig. 225.

# CRYPTOBLASTUS Etheridge and Carpenter, 1886.

### Cryptoblastus kirkwoodensis Shumard.

- 1863. Elwacrinus Kirkwoodensis. Shumard, Trans. St. Louis Acad. Sci., vol. 2, p. 113.
  - St. Louis L. S.: Near Kirkwood, Missouri.
- 1886. Cryptoblastus? Kirkwoodensis. Etheridge and Carpenter, Cat. Blast., p. 144.
- 1894. Cryptoblastus kirkwoodensis. Keyes, Mo. Geol. Surv., vol. 4, p. 139, pl. 17, figs. 8a, b.
  - St. Louis L. S.: Kirkwood, Missouri.

#### Cryptoblastus melo Owen and Shumard.

- 1850. Pentremites melo. Owen and Shumard, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 65, pl. 7, figs. 14a-c.
  - Subcarboniferous L. S.: Burlington, Iowa.
- 1852. Pentremites melo. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 592, tab. 5A, figs. 14a-c.
  - Subcarboniferous L. S.: Burlington, Iowa.
- 1886. Cryptoblastus melo. Etheridge and Carpenter, Cat. Blast., p. 232, pl. 7, figs. 14, 15.
  - Lower Burlington L. S.: Burlington, Iowa; Hannibal, and St. Louis County, Missouri; near Monmouth, Illinois.
- 1894. Cryptoblastus melo. Keyes, Mo. Geol. Surv., vol. 4, p. 139, pl. 18, figs. 7a, b. Lower Burlington L. S.: Sedalia, Louisiana, and Hannibal, Missouri.

#### Cryptoblastus pisum Meek and Worthen.

1869. Granatocrinus pisum. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 89. Upper Burlington L. S.: Burlington, Iowa.

### Cryptoblastus pisum Meek and Worthen—Continued.

1873. Granatocrinus pisum. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 470, pl. 9, fig. 4.

Burlington L. S.: Burlington, Iowa.

1886. Cryptoblastus pisum. Etheridge and Carpenter, Cat. Blast., p. 142.

### Cryptoblastus projectus Meek and Worthen.

1861. Pentremites melo var. projectus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil, p. 142.

Burlington L. S.: Burlington, Iowa.

1868. Granatocrinus projectus. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 496, pl. 18, fig. 7.

Burlington Group: Burlington, Iowa.

# CRYPTONELLA Hall, 1861.

### Cryptonella eudora Hall.

1888. Cryptonella eudora. Herrick, Bull. Den. Univ., vol. 3, p. 48, pl. 5, fig 10. Waverly Group: Licking County, Ohio.

1895. Cryptonella eudora. Herrick, Geol. Surv. Ohio, vol. 7, pl. 21, fig. 10. Kinderhook: Granville, Ohio.

### Cryptonella (?) inconstans Herrick.

1888. Terebratula (\*) inconstans. Herrick, Bull. Den. Univ., vol. 4, p. 24, pl. 3, figs. 8, 9; pl. 11, fig. 18.

Waverly Group: Moot's Run, Licking County, and Lodi, Medina County, Ohio.

1895. Terebratula inconstans. Herrick, Geol. Surv. Ohio, vol. 7, pl. 23. fig. 17. Cuyahoga Shale: Richland County, Lodi, Moot's Run, etc., Ohio.

1895. Cryptonolla (?) inconstans. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 79, figs. 31, 32.

Waverly Group: Medina County, Ohio.

### Cryptonella subelliptica Hall and Clarke.

1895. Cryptonella subelliptica. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 81, figs. 41-43.

Waverly Group: Sciotoville, Ohio.

1897. Cryptonella subelliptica. Hall, 14th Rep. N. Y. State Geol., p. 371, pl. 14, figs. 4-6.

Waverly Group: Sciotoville, Ohio.

### CRYPTOZOE Packard, 1886.

### Cryptozoe problematicus Packard.

1886. Cryptozoe problematicus. Packard, Proc. Am. Phil. Soc., vol. 23, p. 381, figs. 1-3.

Carboniferous: Mazon Creek, Illinois.

# (CTENODONTA Salter, 1851.)

Ctenodonta houghtoni. See Nucula houghtoni.

Ctenodonta hubbardi. See Palæoneilo sulcatina.

Ctenodonta iowensis. See Nucula houghtoni.

Ctenodonta stella. See Nucula stella.

# CUCUMULITES Gurley, 1884.

### Cucumulites tricarinatus Gurley.

1884. Cucumulites tricarinatus. Gurley, New Carb. Foss., Bull. No. 2, p. 3. Warsaw beds: Ellettsville, Indiana.

### Cucumulites tuberculatus Gurley.

1884. Cucumulites tuberculatus. Gurley, New Carb. Foss., Bull. No. 2, p. 3. Warsaw beds: Ellettsville, Indiana.

### CYATHAXONIA Michelin, 1846.

### Cyathaxonia cynodon Rafinesque and Clifford.

\*1820. Turbinolia cynodon. Rafinesque and Clifford, Ann. génér. de Phys. de Bruxelles, tome 5, p. 234.

1851. Cyathaxonia cynodon. Milre-Edwards and Haime, Monog. des Polyp. Foss., p. 321, pl. 1, figs. 4, 4a.

Carboniferous: Hills south of Louisville; Jefferson County; Pittsburg, Pennsylvania.

1860. Cyathaxonia cynodon. Milne-Edwards, Hist. Nat. Corr., vol. 3, p. 330. Carboniferous: North America at Pittsburg, and near Louisville.

### Cyathaxonia distorta Worthen.

1875. Cyathaxonia distorta. Worthen, Geol. Surv. Ill., vol. 6, p. 526, pl. 32, fig. 4.
Coal Measures: Cumberland County, Illinois.

Cyathaxonia profunda Milne-Edwards and Haime. See Lophophyllum profundum.

Cyathaxonia prolifera McChesney. See Lophophyllum profundum.

# CYATHOCRINUS Miller, 1821.

### Cvathocrinus andersoni Miller and Gurley.

1894. Cyathocrinus andersoni. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 30, pl. 3, figs. 2, 3. Keokuk Group: Keokuk, Iowa.

### Cyathocrinus angulatus. See Barycrinus angulatus.

### Cyathocrinus arboreus Meek and Worthen.

1865. Cyathocrinus arboreus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 160.

Keokuk Group: Crawfordsville, Indiana.

1868. Cyathocrinus arboreus. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 520. Keokuk Group: Crawfordsville, Indiana.

#### Cyathocrinus barrisi Hall.

1861. Poteriocrinus barrisi. Hall, Desc. New Spec. Crin., p. 6. Burlington L. S.

1861. Poteriocrinus Barrisi. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 303. Burlington L. S.: Burlington, Iowa.

### Cyathocrinus barydactylus Wachsmuth and Springer.

1878. Cyathocrinus barydactylus. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil., p. 257.

Upper Burlington L. S.: Near Burlington, Iowa.

#### Cyatherinus blairi Miller and Gurley.

1895. Cyathocrinus blairi. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 67, pl. 4, figs. 11-15.
Chouteau L. S.: Sedalia, Missouri.

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# Cyathocrinus blairi Miller and Gurley-Continued.

1896. Cyathocrinus blairi. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 50, pl. 3, figs. 21, 22.

Chouteau L. S.: Sedalia, Missouri.

1896. Cyathoorinus blairi. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 39.

# Cyathocrinus boonvillensis Miller.

1891. Cyathocrinus Boonvillensis. Miller, Bull. Geol. Surv. Mo., No. 4, p. 29, pl. 4, figs. 3, 4.

Keokuk Group: Boonville, Missouri.

1894. Cyathocrinus boonvillensis. Keyes, Mo. Geol. Surv., vol. 4, p. 208. Keokuk L. S.: Boonville, Missouri.

# Cyathocrinus brittsi Miller and Gurley.

1895. Cyathocrinus brittsi. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 70, pl. 4, figs. 35, 36.
Burlington Group: Sedalia, Missouri.

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# Cyathocrinus bullatus. See Barycrinus bullatus.

# Cyathocrinus chouteauensis Miller and Gurley.

1895. Cyathocrinus chouteauensis. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 68, pl. 4, fig. 16.
Chouteau L. S.: Scdalis, Missouri.

1896. Cyathocrinus chouteauensis. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 38, pl. 2, fig. 24.
Chouteau L. S.: Sedalia, Missouri.

Cyathocrinus cornutus. See Barycrinus cornutus.

Cyathocrinus crassibrachiatus. See Barycrinus crassibrachiatus.

Cyathocrinus crassus. See Eupachycrinus crassus.

### Cyathocrinus crawfordsvillensis Miller.

1882. Cyathocrinus crawfordsvillensis. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 5, p. 79, pl. 3, fig. 1.

Keokuk Group: Crawfordsville, Indiana.

### Cyathocrinus dekadactylus. See Scytalocrinus grandis.

Cyathocrinus divaricatus. See Cyathocrinus iowensis.

### Cyathocrinus enormis Meek and Worthen.

1861. Poteriocrinus? enormis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 137.

Burlington L. S.: Burlington, Iowa.

1865. Cyathocrinus enormis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 152.

1868. Cyathocrinus enormis. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 481, pl. 16, figs 3a, b.

Burlington Group: Burlington, Iowa.

1894. Cyathocrinus enormis. Keyes, Mo. Geol. Surv., vol. 4, p. 208, pl. 25, fig. 12. Lower Burlington, L. S.: Hannibal, Missouri.

#### Cyathocrinus faberi Miller and Gurley.

1896. Cyathocrinus faberi. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 85, pl. 5, figs. 12-15.
 Burlington Group: Burlington, Iowa.

# Cyathocrinus farleyi Meek and Worthen.

1866. Cyathocrinus Farleyi. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 252. Keokuk Group: Warsaw, Illinois.

1868. Cyathocrinus Farleyi. Meek and Worthen, Geol. Surv Ill., vol. 3, p. 517, pl. 20, figs. 1a-o.

Keokuk Group: Warsaw, Illinois.

Cyathocrinus florealis. See Zeacrinus florealis.

# Cyathocrinus fragilis Meek and Worthen.

1868. Cyathocrinites fragilis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 237.

Lower Burlington L. S.: Burlington, Iowa.

1873. Cyathocrinites fragilis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 401, pl. 2, fig. 14.

Burlington, L. S.: Burlington, Iowa.

### Cyathocrinus gilesii Wachsmuth and Springer.

1878. Cyathocrinus Gilesii. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil., p. 259.

Upper Burlington, L. S.: Near Burlington, Iowa.

# Cyathocrinus gorbyi Miller.

1892. Cyathoorinus gorbyi. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 44, pl. 5, figs. 6-8.

Keokuk Group: Gosport, Indiana.

1894. Cyathocrinus gorbyi. Miller, 18th Rep. Geol. Surv. Ind., p. 298, pl. 5, figs. 6-8. Keokuk Group: Gosport, Indiana.

### Cyathocrinus granuliferus Shumard.

1854. Cyathocrinus granuliferus. Shumard, Marcy's Expl. Red River of Louis., p. 173.

Carboniferous: Washington County, Arkansas.

### Cyathocrinus gurleyi Miller.

1891. Cyathocrinus gurleyi. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 47, pl. 9, fig. 4.

Keokuk Group: Washington County, Indiana.

1892. Cyathocrinus gurleyi. Miller, 17th Rep. Geol. Surv. Ind., p. 657, pl. 9, fig. 4. Keokuk Group: Washington County, Indiana.

Cyathocrinus hamiltonensis. See Cyathocrinus parvibrachiatus.

#### Cyathocrinus harrisi Miller.

1880. Cyathocrinus harrisi. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 2, p. 255, pl. 15, fig. 2.

Keokuk Group: Crawfordsville, Indiana.

### Cyathocrinus harrodi Wachsmuth and Springer.

1879. Cyathocrinus Harrodi. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil., p. 310 (Rev. Palæocr., I, p. 87.) Keokuk L. S.: Canton, Indiana.

Cyathocrinus hexadactylus. See Vasocrinus hexadactylus.

Cyathocrinus hoveyi. See Barycrinus hoveyi.

### Cyathocrinus incipiens Hall.

1861. Cyathocrinus incipiens. Hall, Desc. New Spec. Crin., p. 5. Burlington L. S.

1861. Cyathocrinus incipiens. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 296. Burlington L. S.: Burlington, Iowa.

Cyathocrinus inequidactylus. See Cyathocrinus maxvillensis.

Cyathocrinus inflexus. See Ceriocrinus inflexus.

### Cyathocrinus insperatus Lyon.

1869. Cyathocrinus insperatus. Lyon, Trans. Am. Phil. Soc., vol. 8, p. 457, pl. 27, fig. K.

Subcarboniferous silicious sandstone: Crawfordsville, Montgomery County, Indiana.

Cyathocrinus intermedius. See Parisocrinus intermedius.

### Cyathocrinus iowensis Owen and Shumard.

- 1850. Cyathocrinus Iowensis. Owen and Shumard, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 63, pl. 7, fig. 11.
  - Carboniferous L. S.: Burlington, Iowa.
- 1852. Cyathocrinus ioweneis. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 591, tab. 5A, figs. 11a-c.
  Carboniferous L. S.: Burlington, Iowa.
- 1858. Cyathocrinus malvaceus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 554, pl. 9, figs. 4a, b.
  Burlington L. S.: Burlington, Iowa.
- 1858. Cyathocrinus divaricatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 554, pl. 9, fig. 5. Burlington L. S.: Burlington, Iowa.
- 1861. Cyathocrinus viminalis. Hall, Desc. New Spec. Crin., p. 5. Burlington L, S.
- 1861. Cyathocrinus viminalis. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 299. Burlington L. S.: Burlington, Iowa.
- 1893. Cyathocrinus viminalis. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 28, pl. 3, fig. 7.
  Burlington L. S.: Burlington, Iowa.
- 1894. Cyathocrinus iowensis. Keyes, Mo. Geol. Surv., vol. 4, p. 207, pl. 25, fig. 11. Burlington L. S.: Louisiana and Sedalia, Missouri.

Cyathocrinus kelloggi. See Barycrinus kelloggi.

### Cyathocrinus labyrinthicus Miller.

- 1891. Cyathocrinus labyrinthicus. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 49, pl. 12, figs. 11-14.
  Keokuk Group: Boonville, Missouri.
- 1891. Cyathocrinus labyrinthicus. Miller, 17th Rep. Geol. Surv. Ind., p. 659, pl. 12, figs. 11-14.
  Keokuk Group: Boonville, Missouri.

Cyathocrinus laviculus. See Poteriocrinus laviculus.

### Cyathocrinus lamellosus White.

1862. Cyathocrinus lamellosus. White, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 504. Burlington L. S.: Burlington, Iowa.

Cyathocrinus latus. See Barycrinus sculptilis.

Cyathocrinus lyoni. See Vasocrinus hexadactylus.

# Cyathocrinus macadamsi Miller and Gurley.

1895. Cyathocrinus macadamsi. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 69, pl. 4, figs. 31, 32.
St. Louis Group: Alton, Illinois.

Cyathocrinus macropleurus. See Vasocrinus macropleurus.

Cyathocrinus magister. See Barycrinus magister.

Cyathocrinus magnoliæformis. See Zeacrinus magnoliæformis.

Cyathocrinus malvaceus. See Cyathocrinus iowensis.

Cyathocrinus maniformis. See Eupachycrinus maniformis.

### Cyathocrinus marshallensis Worthen.

- 1882. Cyathocrinus? marshallensis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 33.
  - Kinderhook Group: Marshalltown, Iowa.
- 1883. Cyathocrinus Marshallensis. Worthen, Geol. Surv. Ill., vol. 7, p. 310, pl. 30, fig. 4.

Kinderhook Group: Marshalltown, Iowa.

### Cvathocrinus maxvillensis Whitfield.

- 1882. Cyathocrinus inequidactylus. Whitfield, Ann. N. Y. Acad. Sci., vol. 2, p. 219. (Not. C. inequidactylus McCoy, 1844.) Maxville L. S.: Newtonville, Ohio.
- 1891. Cyathocrinus Maxvillensis. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 577, pl. 13, figs. 5-8. Maxville L. S.: Newtonville, Ohio.
- 1895. Cyathocrinus Maxvillensis. Whitfield, Geol. Surv. Ohio, vol. 7, p. 465, pl. 9, figs. 5-8. Maxville L. S.: Newtonville, Ohio.

Cyathocrinus meekianus. See Barycrinus meekianus.

# Cyathocrinus multibrachiatus Lyon and Casseday.

- 1859, Cyathocrinus multibrachiatus. Lyon and Casseday, Am. Jour. Sci. (2), vol. 28, p. 245. Subcarboniferous: Montgomery County, Indiana.
- 1872. Cyathocrinus multibrachiatus. Hall, Photo. Plates of Crin., pl. 5, figs. 3-6.
- 1882. Cyathocrinus multibrachiatus. White, 11th Rep. Geol. Surv. Ind., p. 367, pl. 39, fig. 1. Keokuk Group: Crawfordsville, Indiana.

### Cyathocrinus opimus Miller and Gurley.

1890. Cyathocrinus opimus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 348, pl. 5. fig. 5. Keokuk Group: Crawfordsville, Indiana.

### Cyathocrinus parvibrachiatus Hall.

- 1861. Cyathocrinus parvibrachiatus. Hall, Desc. New. Spec. Crin., p. 6. Keokuk L. S.
- 1861. Cyathocrinus parvibrachiatus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 294. Keokuk L. S.: Keokuk, Iowa.
- 1872. Cyathocrinus parribrachiatus. Hall, Photo. Plates of Crin., pl. 5, figs. 1, 2.
- 1882. Cyathocrinus hamiltonensis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 32. Upper Keokuk L. S.: Hamilton, Illinois.
- 1883. Cyathocrinus parcibrachiatus. Worthen, Geol. Surv. Ill., vol. 7, p. 309, pl. 28, fig. 5.

Keokuk L. S.: Hamilton, Illinois.

# Cyathocrinus pentalobus. See Eupachycrinus quatuor-decembrachialis. Cyathocrinus poterium Meek and Worthen.

1870. Cyathocrinites? poterium. Meek and Worthen, Proc. Acad. Nat. Sci. Phil.,

Keokuk Group: Crawfordsville, Indiana.

1873. Cyathocrinites poterium. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 489, pl. 12, fig. 4.

Keokuk Group: Crawfordsville, Indiana.

#### Cyathocrinus protuberans. See Barycrinus bullatus.

Cyathocrinus quinquelobus. See Barycrinus stellatus.

# Cyathocrinus rigidus White.

1862. Cyathocrinus rigidus. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 8. Lower Burlington L. S.: Burlington, Iowa.

#### Cyathocrinus rotundatus Hall.

- 1858. Cyathocrinus rotundatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 555, pl. 9, figs. 7a, b. Burlington L. S.: Quincy, Illinois.
- 1860. Cyathocrinae rotundue. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., pl. 3, fig. 8.

### Cyathocrinus saffordi Meek and Worthen.

1860. Cyathocrinus Saffordi. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 391. Keokuk L. S.: White's Creek, Tennessee.

1866. Cyathocrinus saffordi. Meek and Worthen, Geol. Surv. III., vol. 2, p. 236, pl. 17, figs. 5a, b.

Keokuk L. S.: White's Creek Springs, Tennessee.

### Cyathocrinus sampsoni Miller.

1891. Cyathocrinus Sampsoni. Miller, Bull. Geol. Surv. Mo., No. 4, p. 30, pl. 4, figs. 9, 10.

Burlington Group: Sedalia, Missouri.

Cyathocrinus sangamonensis. See Cromyocrinus sangamonensis.

Cyathocrinus scitulus. See Barycrinus sculptilis.

Cyathocrinus sculptilis. See Barycrinus sculptilis.

# Cyathocrinus signatus Miller and Gurley.

1894. Cyathoorinus signatus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat-Hist., p. 32, pl. 6, fig. 10.

Keokuk Group: Washington County, Indiana.

Cyathocrinus solidus. See Barycrinus solidus.

### Cyathocrinus somersi Whitfield.

1882. Cyathocrinus Somersi. Whitfield, Ann. N. Y. Acad. Sci., vol. 2, p. 226.
Coal Measures: Carbon Hill, Hocking County, Ohio.

1891. Cyathocrinus Somersi. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 596, pl. 15, figs. 4, 5.

Coal Measures: Carbon Hill, Hocking County, Ohio.

1895. Cyathocrinus Somersi. Whitfield, Geol. Surv. Ohio, vol. 7, p. 482, pl. 11, figs. 4, 5.

Coal Measures: Carbon Hill, Hocking County, Ohio.

Cyathocrinus spurius. See Barycrinus spurius.

Cyathocrinus stellatus. See Barycrinus stellatus.

#### Cyathocrinus stillativus White.

1880. Cyathocrinus stillativus. White, Proc. U. S. Nat. Mus., vol. 2, p. 258, pl. 1, figs. 9, 10.

Upper Coal Measures: 30 miles west of Humboldt, Kansas.

1880. Cyathocrinus stillativus. White, Cont. to Inv. Pal., No. 6, p. 125, pl. 35, figs. 3a, b.

Upper Coal Measures: 30 miles west of Humboldt, Kansas.

1894. Phialocrinus stillativus. Keyes, Mo. Geol. Surv., vol. 4, p. 219, pl. 28, figs. 6a, b.

Upper Coal Measures: Kansas City, Missouri.

#### Cyathocrinus subtumidus Meek and Worthen.

1865. Cyathocrinus subtumidus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 151.

Keokuk L. S.: Near White Hall, Green County, Illinois.

1873. Barycrinus subtumidus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 487, pl. 13, fig. 3.

Keokuk L. S.: Near Whitehall, Green County, Illinois.

### Cyathocrinus tenuidactylus Meek and Worthen.

1868. Cyathocrinites tenuidactylus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 237.

Lower Burlington Group: Burlington, Iowa.

# Cyathocrinus tenuidactylus Meek and Worthen-Continued.

1873. Cyathocrinites tenuidactylus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 403, pl. 2, fig. 15.

Burlington L. S.: Burlington, Iowa.

Cyathocrinus thomæ. See Barycrinus thomæ.

# Cyathocrinus tumidulus Miller and Gurley.

1894. Cyathocrinus tumidulus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 31, pl. 3, fig. 7.

Keokuk Group: Indian Creek, near Crawfordsville, Indiana.

Cyathocrinus tumidus. See Barycrinus tumidus.

Cyathocrinus viminalis. See Cyathocrinus iowensis.

Cyathocrinus wachsmuthi. See Barycrinus wachsmuthi.

Cyathocrinus (species undetermined).

1859. Cyathorinus —— ? Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 24. Upper Coal Measures: Cottonwood Creek, Kansas.

### CYATHOPHYLLUM Goldfuss, 1826.

### Cyathophyllum billingsi Dawson.

1868. Cyathophyllum Billingsi. Dawson, Acad. Geol., p. 287, fig. 84b. Carboniferous L. S.: Stewiacke, Nova Scotia.

Cyathophyllum flexuosum. See Campophyllum torquium.

Cyathophyllum fungites. See Zaphrentis dalei.

### Cyathophyllum glabrum Keyes.

1894. Cyathophyllum glabrum. Keyes, Mo. Geol. Surv., vol. 4, p. 105, pl. 12, figs. 6a, b.

Chouteau L. S.: Curryville, Missouri.

### Cyathophyllum nevadense Meek.

1877. Cyathophyllum (Campophyllum?) Nevadense. Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 60, pl. 5, figs. 3-3b.

Carboniferous: Boxelder Peak, Wasatch Range, Utah.

### Cyathophyllum subcæspitosum Meek.

1877. Cyathophyllum suboxspitosum. Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 60, pl. 5, figs. 4-4b.

Carboniferous: Near Swansea, White Pine District, Nevada.

1873. Cyathophyllum subcæspitosum. Meek, U. S. Geol. Surv. Mont., Idaho, Wyo., and Utah, p. 470.

Carboniferous: Divide between Ross Fork and Lincoln Valley, Montana.

Cyathophyllum torquium. See Campophyllum torquium.

Cyathophyllum vermiculare. See Campophyllum torquium.

### CYCLONEMA Hall, 1852.

### Cyclonoma levenworthanum Hall.

1856. Pleurotomaria Levenworthana. Hall, Trans. Albany Inst., vol. 4, p. 24. St. Louis, L. S.: Spergen Hill and Bloomington, Indiana; Alton, Illinois.

1882. Cyclonema Levenworthana. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 75, pl. 8, figs. 29-31.

St. Louis Group: Spergen Hill and Bloomington, Indiana; Alton, Illinois.

1883. Cyclonema Levenworthana. Hall, 12th Rep. Geol. Surv. Ind., p. 363, pl. 31, figs. 29-31.

St. Louis Group: Alton, Illinois; Spergen Hill, Lanesville, and Bloomington, Indians.

# Cyclonema levenworthanum Hall-Continued.

1888. Cyclonema levenworthana? Herrick, Bull. Den. Univ., vol. 3, p. 86, pl. 1, fig. 20.

Waverly Group: Licking County, Ohio.

### Cyclonema pulchellum Miller and Gurley.

1896. Cyclonema pulchellum. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 19, pl. 3, fig. 6.

Knobstone Group: Near New Albany, Indiana.

Cyclonema strigillata. See Pleurotomaria strigillata.

# Cyclonema subangulatum Hall.

1856. Pleurotomaria subangulata. Hall, Trans. Albany Inst., vol. 4, p. 25. St. Louis L. S.: Spergen Hill, Indiana.

1882. Cyclonema subangulatum. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 76, pl. 8, fig. 32.

St. Louis Group: Spergen Hill, Indiana.

1883. Cyclonema subangulatum. Hall, 12th Rep. Geol. Surv. Ind., p. 364, pl. 31, fig. 32.

St. Louis Group: Spergen Hill and Lanesville, Indiana.

### Cyclonema (species undetermined).

1888. Cyclonema? Herrick, Bull. Den. Univ., vol. 3, pl. 8, fig. 17. Waverly Group: Licking County, Ohio.

### CYCLOPORA Prout, 1860.

### Cyclopora discoidea. See Proutella discoidea.

### Cyclopora expatiata Ulrich.

1890. Cyclopora expatiata. Ulrich, Gool. Surv. Ill., vol. 8, p. 673, pl. 68, figs. 4-4d. Keokuk Group: Warsaw and Nauvoo, Illinois.

1894. Cyclopora expatiata. Keyes, Mo. Geol. Surv., vol. 5, p. 37. Keokuk Group: Warsaw, Illinois.

### Cyclopora fungia Prout.

1860. Cyclopora fungia. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 577. Keokuk L. S.: St. Francisville, Missouri.

1866. Cyclopora fungia. Prout, Geol. Surv. Ill., vol. 2, p. 419, pl. 22, figs. 9-9b. Keokuk Group: St. Francisville, Missouri.

1890. Cyclopora fungia. Ulrich, Geol. Surv. Ill., vol. 8, p. 671, pl. 68, figs. 3-3g. Keokuk and Warsaw beds: Illinois and Iowa.

1894. Cyclopora fungia. Keyes, Mo. Geol. Surv., vol. 5, p. 36. Keokuk L. S.: St. Francisville, Missouri.

### Cyclopora polymorpha. See Stenopora tuberculata.

### CYCLOPORELLA Ulrich, 1890.

#### Cycloporella? perversa Ulrich.

1890. Cycloporella † perversa. Ulrich, Geol. Surv. Ill., vol. 8, p. 676, pl. 69, figs. 3-3b.

Keokuk Group: Warsaw, Illinois; Green County, Illinois; Bentonsport,

1894. Cycloporella perversa. Keyes, Mo. Geol. Surv., vol. 5, p. 37. Keokuk L. S.: Bentonsport, Iowa.

#### Cycloporella spinifera Ulrich.

1890. Cycloporella spinifera. Ulrich, Geol. Surv. Ill., vol. 8, p. 675, pl. 69, figs. 1-1c. Keokuk Group: Warsaw, Illinois.

. 1894. Cycloporella spinifera. Keyes, Mo. Geol. Surv., vol. 5, p. 37. Keokuk L. S.: Warsaw, Illinois.

### CYCLUS De Koninck, 1841.

### Cyclus americanus Packard.

1885. Cyclus americanus. Packard, Am. Nat., vol. 19, p. 292.

Carboniferous: Mazon Creek, Illinois.

1886. Cyclus americana. Packard, Mem. Nat. Acad. Sci., vol. 3, pt. 2, p. 143, pl. 5, figs. 1, 1a; pl. 6, figs. 4, 4a.

Carboniferous: Mazon Creek, Illinois.

# (CYPRICARDELLA Hall, 1858.)

Cypricardella eximia. See Microdon? eximia.

Cypricardella gorbyi. See Microdon? gorbyi.

Cupricardella nucleata. See Microdon nucleata.

Cypricardella oblonga. See Microdon oblonga.

Cypricardella plicata. See Goniophora plicata.

Cypricardella quadrata. See Microdon quadrata.

Cypricardella subelliptica. See Microdon subelliptica.

### CYPRICARDIA Lamark, 1801.

# Cypricardia chouteauensis Swallow.

1863. Cypricardia (?) Chouteauensis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 96.

Chouteau L. S.: Cooper County, Missouri.

Cypricardia indianensis. See Cypricardinia indianensis.

### Cypricardia insecta Dawson.

1868. Cypricardia insecta. Dawson, Acad. Geol., p. 303, fig. 106.

Carboniferous L. S.: Windsor, Nova Scotia.

### Cypricardia occidentalis Hall.

1852. Cypricardia occidentalis. Hall, Stansb. Exped. Gt. Salt Lake, p. 412, pl. 2, fig. 2.

Carboniferous: Big Blue River.

Cypricardia occidentalis Swallow. See Cypricardia swallovana.

### Cypricardia pikensis Swallow.

1863. Cypricardia (†) Pikensis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 95. Coal Measures: Pike County, Missouri.

### Cypricardia plicatula Swallow.

1858. Cypricardia plicatula. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 205.

Lower Coal Measures: Howard County, Missouri.

Middle Coal Measures: Platte County, Missouri.

Coal Measures: Kansas.

Cypricardia randolphensis. See Sanguinolites randolphensis.

Cypricardia rigida. See Sphenotus rigidus.

# Cypricardia shumardana Swallow.

1863. Cypricardia (?) Shumardiana. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 95.

Ste. Genevieve L. S.: Back of Prairie du Rocher, Illinois.

Cypricardia subplana. See Edmondia subplana.

### Cypricardia swallovana Miller.

1863. Cypricardia (?) occidentalis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 96. (Not C. occidentalis Hall, 1852.)
Harrison County, Missouri.

1883. Cypricardia swallovana. Miller, Am. Pal. Foss., 2d ed., p. 310.

# Cypricardia undulata Gurley.

1883. Cypricardia undulata. Gurley, New Pal. Foss., Bull. No. 1, p. 3.
Lower Coal Measures: Newport, Vermilion County, Indiana.

# Cypricardia ventricosa Hall.

1860. Cypricardia ventricosa. Hall, 13th Rep. N. Y. State Cab. Nut. Hist., p. 110. Goniatite L. S.: Rockford, Indiana.

Cypricardia wheeleri. See Schizodus wheeleri.

# CYPRICARDINIA Hall, 1859.

### Cypricardinia carbonaria Meek.

1871. Cypricardinia? oarbonaria. Meek, Proc. Acad. Nat. Sci. Phil., p. 163. Lower Coal Measures: Newark, Ohio.

1875. Cypricardinia? carbonaria. Meek, Pal. Ohio, vol. 2, p. 342, pl. 19, figs. 8a, b. Lower Coal Measures: Newark, Ohio.

1887. Cypricardinia (?) carbonaria. Herrick, Bull. Den. Univ., vol. 2, p. 35,pl. 4, figs. 17, 18.
Coal Measures: Flint Ridge, Ohio.

### Cypricardinia consimilis Hall.

1885. Cypricardinia consimilis. Hall, Pal. N. Y., vol. 5, pt. 1, p. 486, pl. 79, figs. 18-21; pl. 96, fig. 3.

Waverly S. S.: Licking and Medina counties, Ohio; Warren, Pennsylvania.

# Cypricardinia indianensis Hall.

1856. Cypricardia Indianensis. Hall, Trans. Albany Inst., vol. 4, p. 18. St. Louis L. S.: Spergen Hill, Indiana.

1882. Cypricardinia (?) Indianensis. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 58, pl. 7, figs. 10-14.

St. Louis Group: Spergen Hill and Bloomington, Indiana; Alton, Illinois.

1883. Cypricardinia Indianensis. Hall, 12th Rep. Geol. Surv. Ind., p. 342, pl. 30, figs. 10-14.

St. Louis Group: Alton, Illinois; Spergen Hill, Bloomington, and Laneeville, Indiana.

### Cypricardinia scitula Herrick.

1888. Cypricardinia (Microdon?) scitula. Herrick, Bull. Den. Univ., vol. 4, p. 38, pl. 6, fig. 8.

Waverly Group: Moot's Run, Licking County, Ohio.

1891. Cypricardinia (cf. scitula). Herrick, Bull. Geol. Soc. Am., vol. 2, p. 46, pl. 1, fig. 15.
Upper Waverly Group: Scioto County, Ohio.

1895. Cypricardinia scitula. Herrick, Geol. Surv. Ohio, vol. 7, pl. 17, fig. 8. Cuyahoga Shale: Moot's Run, Licking County, Ohio.

#### Cypricardinia sulcifera Winchell.

1863. Sanguinolites sulciferus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 14. Yellow S. S.: Burlington, Iowa.

1885. Cypricardinia sulciforus. Hall, Pal. N. Y., vol. 5, pt. 1, p. 487, pl. 79, fig. 22. Yellow S. S.: Burlington, Iowa.

#### Cypricardinia (species undetermined).

1888. Cypricardinia? sp. Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 43. Waverly Group: Rushville, Ohio.

# (CYPRICARDITES Conrad, 1841.)

### Cypricardites (species undetermined).

1895. Cypricardites sp. ? Herrick, Geol. Surv. Ohio, vol. 7, pl. 23, fig. 7. Highest horizon of Waverly Group: Rushville, Ohio.

### CYPRIDINA Milne-Edwards, 1838.

### Cypridina herzeri Ulrich.

1891. Cypridina herzeri. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 209, pl. 14, figs. 9a-c.

Near top of Waverly Group: Richfield, Ohio.

# (CYRTIA Dalman, 1827.)

Cyrtia acutirostris. See Cyrtina acutirostris.

Cyrtia gigas. See Syringothyris gigas.

### CYRTINA Davidson, 1858.

### Cyrtina acutirostris Shumard.

1855. Cyrtia acutirostris. Shumard, Geol. Rep. Mo., p. 204, pl. C, figs. 3a-c. Lithographic L. S.: Hannibal and Louisiana, Missouri.

1888. Cyrtina acutirostris. Herrick, Bull. Den. Univ., vol. 4, pl. 11, fig. 20. Waverly Group: Lodi, Ohio.

1894. Cyrtina acutirostris. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 29, fig. 18.

Chouteau L. S.: Pike County, Missouri.

1894. Cyrtina acutirostris. Keyes, Mo. Geol. Surv., vol. 5, p. 89, pl. 89, figs. 10a, b. Louisiana L. S.: Louisiana and Hannibal, Missouri.

1895. Cyrtina acutirostris. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 28, figs. 38-42, 44, 54.

Chouteau L. S.: Pike County, Missouri.

#### Cyrtina burlingtonensis Rowley.

1893. Cyrtina burlingtonensis. Rowley, Am. Geol., vol. 12, p. 308, pl. 14, figs. 15-17. Lower Burlington L. S.: Louisiana, Missouri.

### Cyrtina lachrymosa Hall.

1894. Cyrtina lachrymosa. Hall, 13th Ann. Rep. N. Y. State Geol., p. 650. Waverly Group: Richfield, Ohio.

1894. Cyrtina lachrymosa. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 29, fig. 21.

Waverly Group: Richfield, Ohio.

1895. Cyrtina lachrymosa. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, p. 362, pl. 28, figs. 36, 37, 47.

Waverly Group: Richfield, Ohio.

1897. Cyrtina lachrymosa. Hall, 14th Rep. N. Y. State Geol., p. 358, pl. 8, figs. 1-3. Waverly Group: Richfield, Ohio.

#### Cyrtina neogenes Hall and Clarke.

- 1895. Cyrtina sp. f Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 39, figs. 25-28. Burlington L. S. (chert beds): Burlington, Iowa.
- 1895. Cyrtina neogenes. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 84, fig. 41. Chert of Burlington, L. S.: Burlington, Iowa.
- 1897 Cyrtina neogenes. Hall, 14th Rep. N. Y. State Geol., p. 372, pl. 8, figs. 4-8. Chert of Burlington L. S.: Burlington, Iowa.

### Cyrtina (species undetermined).

1888. Cyrtina sp. Herrick, Bull. Den. Univ., vol. 3, p. 47, pl. 8, fig. 18. Waverly Group: Licking County, Ohio.

# CYRTOCERAS Goldfuss, 1832.

### Cyrtoceras ashmanni Miller.

1889. Cyrtoceras ashmanni. Miller, N. A. Geol. and Pal., p. 433, fig. 728. Warsaw Group: Spergen Hill, Indiana.

### Cyrtoceras cessator Hall and Whitfield.

1877. Cyrtoceras cessator. Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 278, pl. 6, fig. 15.

Coal Measures: Near Eberhardt Mill, White Pine, Nevada.

### Cyrtoceras curtum Meek and Worthen.

1860. Cyrtoceras curtum. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 468. Coal Measures: Grayville, Illinois.

1861. Cyrtoceras (Aploceras) curtum. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 148.

1866. Cyrtoceras (Aploceras) curtum. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 388, pl. 30, figs. 1a-c. Upper Coal Measures; Grayville, Illinois.

### Cyrtoceras dilatatum Meek and Worthen.

1860. Cyrtoceras t dilatatum. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 468.

Upper Coal Measures: Near Springfield, Illinois.

1866. Cyrtocerae? dilatatum. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 389, pl. 29, fig. 2.

Upper Coal Measures: Springfield, Illinois.

### Cyrtoceras dorsatum Swallow.

1858. Cyrtoceras dorsatum. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 197. Permian: Near Smoky Hill Fork, Kansas.

#### Cyrtoceras kansasense Miller and Gurley.

1895. Cyrtoceras kansasense. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 88, pl. 5, figs. 5-7. Upper Coal Measures: Kansas City, Missouri.

#### Cyrtoceras rockfordense Winchell.

1865. Cyrtoceras Rockfordense. Winchell, Proc. Acad. Nat. Sci. Phil., p. 132.
Marshall Group: Rockford, Indiana.

### Cyrtoceras tesselatum Winchell.

1862. Cyrtoceras tesselatum? Winchell, Am. Jour. Sci. (2), vol. 33, p. 362. (Not C. tesselatum De Koninck, 1844.)
Marshall S. S.

### Cyrtoceras unicorne Winchell.

1863. Cyrtoceras unicorne. Winchell, Proc. Acad. Nat. Sci. Phil., p. 23. Yellow S. S.: Burlington, Iowa.

# CYRTOLITES Conrad, 1838.

# Cyrtolites gillanus White and St. John.

1868. Cyrtolites? Gillianus. White and St. John, Trans. Chicago Acad. Sci., vol. 1, p. 123, fig. 8.

Upper Coal Measures: Madison County, lowa.

Bull. 153----14

# CYSTELASMA Miller, 1891.

# Cystelasma lanesvillense Miller.

1891. Cystelasma lanesvillense. Miller, Adv. Shoots, 17th Rep. Geol. Surv. Ind., p. 13, pl. 1, figs. 15, 16.

Warsaw Group: Lanesville, Indiana.

1892. Cystelasma lanesvillense. Miller, 17th Rep. Geol. Surv. Ind., p. 623, pl. 1, figs. 15, 16.

Warsaw Group: Lanesville, Indiana.

# CYSTODICTYA Ulrich, 1882.

## Cystodictya americana Ulrich.

1890. Cystodictya americana. Ulrich, Geol. Surv. Ill., vol. 8, p. 494, pl. 76, figs. 5, 5a.

Keokuk Group: King's Mountain Tunnel, Kentucky; Bentonsport, Iowa.

1894. Cystodictya americana. Keyes, Mo. Geol. Surv., vol. 5, p. 17. Keokuk L. S.: Bentonsport, Iowa.

## Cystodictya angusta Ulrich.

1888. Cystodictya augusta. Ulrich, Bull. Den. Univ., vol. 4, p. 82, pl. 14, fig. 20. Waverly Group: Moot's Run, Licking County, Ohio.

# Cystodictya carbonaria Meek.

1871. Ptilodictya (Stictopora) oarbonaria. Meek, Proc. Acad. Nat. Sci. Phil., p. 160. Lower Coal Measures: Newark, Ohio.

1875. Ptilodictya (Stictopora) carbonaria. Meek, Pal. Ohio, vol. 2, p. 328, pl. 20, figs. 3a, b.

Coal Measures: Newark, Ohio.

1887. Cystodictya carbonaria. Foerste, Bull. Den. Univ., vol. 2, p. 74, pl. 7, figs. 2a-c.

Coal Measures: Bald Hill, Ohio.

# Cystodictya lineata Ulrich.

1884. Cystodictya lineata. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 7, p. 37, pl. 2, figs. 4-4c.

Keokuk Group: King's Mountain tunnel, Kentucky.

#### Cystodictya lineata, var. major Ulrich.

1890. Cystodictya lineata, var. major. Ulrich, Geol. Surv. Ill., vol. 8, p. 495, pl. 76, fig. 3.

I St. Louis L. S.: I Alton, Illinois.

#### Cystodictya nitida Ulrich.

1890. Cystodictya nitida. Ulrich, Geol. Surv. Ill., vol. 8, p. 493, pl. 76, figs. 4-4c. Keokuk Group: Bentonsport, Iowa.

1894. Cystodictya nitida. Keyes, Mo. Geol. Surv., vol. 5, p. 17. Keokuk L. S.: † St. Francisville, Missouri; Bentonsport, Iowa.

#### Cystodictya ocellata Ulrich.

1882. Cystodictya occellata. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 5, p. 170, pl. 8, figs. 3, 3a.

¶ Keokuk Group: Near Somerset, Kentucky.

1884. Cystodictya ocellata. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 7, pl. 2, figs. 3, 3a.

#### Cystodictya pustulosa Ulrich.

1890. Cystodictya pustulosa. Ulrich, Geol. Surv. Ill., vol. 8, p. 495, pl. 76, figs. 2, 2a. Keokuk Group: King's Mt. Tunnel, Kentucky; Keokuk, Iowa; Nauvoo, Illinoia.

1894. Cystodictya pustulosa. Keyes, Mo. Geol. Surv., vol. 5, p. 17. Keokuk L. S.: Keokuk. Iowa.

### Cystodictya simulans Ulrich.

1888. Cystodictya simulans. Ulrich, Bull. Den. Univ., vol. 4, p. 81, pl. 13, fig. 10.

Waverly Group: Moot's Run, Licking County, Ohio.

Keokuk Group: Warsaw, Illinois; Keokuk, Iowa.

# Cystodictya zigzag Ulrich.

1888. Cystodictya zigzag. Ulrich, Bull. Den. Univ., vol. 4, p. 81, pl. 13, figs. 11, 11a. Cuvshogs Shale: Richfield. Ohio.

Keokuk Group: Keokuk, Iowa.

## Cystodictya (species undetermined).

1888. Cystodictya, sp. undet. Ulrich, Bull. Den. Univ., vol. 4, p. 83.

Waverly Group: Moot's Run, Licking County, Ohio.

# CYTHERE Müller, 1785.

## Cythere americana Shumard.

1858. Cythere (Beyrichia) Americana. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 227.

Upper Coal Measures: Valley of Verdigris River, Kansas.

# Cuthere carbonaria. See Leperditia carbonaria.

# Ovthere crassimarginata Winchell.

1862. Cythere crassimarginata. Winchell, Proc. Acad. Nat. Sci. Phil., p. 429.
Marshall S. S.: Battle Creek, Liberty, Moscow, Pointe aux Barques, and near Napoleon, Michigan.

1865. Cythere crassimarginata. Winchell, Proc. Acad. Nat. Sci. Phil., p. 133.

Marshall Group: Hillsdale, Michigan.

1870. Cythere crassimarginata. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 259. Waverly Group: Rockville, Ohio.

Cythere cyclas. See Cythere nebrascensis.

# Cythere nebrascensis Geinitz.

1866. Cythere Nebrascensis. Geinitz, Carb. und Dyas in Nebr., p. 2, tab. 1, fig. 2. Nebraska City, Nebraska.

1866. Cythere Cyclas? var. Geinitz, Carb. und Dyas in Nebr., p. 2, tab. 1, figs. 3, 4. (Not C. cyclas of v. Keyserling.)
Nebraska City, Nebraska.

1872. Cythere Nebrascensis. Meek, U. S. Geol. Surv. Nebr., p. 237, pl. 11, figs. 2, ¶ 3a, b.

Upper Coal Measures: Nebraska City, Nebraska.

1888. Cythere nebrascensis? Keyes, Proc. Acad. Nat. Sci. Phil., p. 243.
Lower Coal Measures: Des Moines, Iowa.

1891. Cythere nebrascensis. White, Bull. U. S. Geol. Surv., No. 77, p. 30, pl. 4, fig. 20.

Permian: Military Crossing, Baylor County, Texas.

#### Cythere chicensis Herrick.

1888. Ostracode crustacean. Herrick, Bull. Den. Univ., vol. 3, pl. 3, fig. 19. Waverly Group: Licking County, Ohio.

1888. Cythere obioensis. Herrick, Bull. Den. Univ., vol. 4, p. 60, pl. 8, fig. 8. Waverly Group: Ashland County, Newark and Rushville, Ohio.

1895. Cythere ohioensis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 19, fig. 8. Keokuk Group: Rushville, Ohio.

## Cythere simplex White and St. John.

\*1867. Cythere simplex. White and St. John, Prelim. Not. New Gen. and Spec.

St. Louis L. S.: Hamilton County, lowa.

Cythere simplex White and St. John-Continued.

1868. Cuthere simplex. White and St. John, Trans. Chicago Acad. Sci., vol. 1. p. 127.

St. Louis L. S.: Sternberg's Mill, on Boone River, 6 miles southwest from Webster City, Hamilton County, Iowa-

# Cythere (species undetermined).

1872. Cythere sp. Meek, U. S. Geol. Surv. Nebr., p. 237, pl. 11, figs. 1a-d. Upper Coal Measures: Nebraska City, Nebraska; Union County, Iowa.

1884. Cythere? spp. indett Jones and Kirkby, Geol. Mag. (3), vol. 1, p. 261, pl. 12, figs. 11a-c.

Lower Coal Measures: Horton, Nova Scotia.

### CYTHERELLA Jones and Bosquet, 1848.

Cytherella inflata. See Carbonia fabulina.

## Cytherella ovatiformis Ulrich.

1891. Cytherella ovatiformis. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 209, pl. 17, figs. 3, 4a-c. Chester Group: Caldwell County, Kentucky.

#### Cytherella unioniformis Herrick.

1891. Cytherella unioniformis. Herrick, Bull. Geol. Soc. Am., vol. 2, p. 44, pl. 1, figs. 8-10.

Upper Waverly Group: Scioto County, Ohio.

# CYTHERELLINA Jones and Holl, 1869.

# Cytherellina glandella Whitfield.

1882. Cytherellina glandella. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 94, pl. 9, figs. 28, 29.

St. Louis Group: Spergen Hill, Indiana.

1883. Cytherellina glandella. Hall, 12th Rep. Geol. Surv. Ind., pl. 32, figs. 28, 29.

#### (CYTHERODON Hall and Whitfield, 1873.)

Cytherodon cuneus. See Schizodus cuneus.

# DALMANITES Barrande, 1852.

## Dalmanites ? cuyahogæ Claypole.

1884. Dalmanites? Cuyahoga. Claypole, Geol. Mag. (3), vol. 1, p. 306, fig. A, p. 505. Cuyahoga Shale: Akron, Ohio.

1884. Dalmanites ? Cuyahogæ. Woodward, Monog. Brit. Carb. Tril, p. 79, fig. 6. Cuyahoga Shale: Akron, Ohio.

1887. Dalmanites ? cuyahogæ. Herrick, Bull. Den. Univ., vol. 2, p. 55, pl. 2, fig. 33.

## DAWSONELLA Bradley, 1874.

## Dawsonella meeki Bradley.

1872. Anomphalus Meeki. Bradley, Am. Jour. Sci. (3), vol. 4, p. 88, fig. 2. Coal Measures: Petty's Ford of the Little Vermilion River, below Georgetown, Vermilion County, Illinois.

1874. Dawsonella Meeki. Bradley, Am. Jour. Sci. (3), vol. 7, p. 151.

1880. Dawsonella Meeki. Dawson, Am. Jour. Sci. (3), vol. 20, p. 413, figs. 12, 13. Coal Measures: Pelly's Fort, Vermilion River, Illinois.

1881. Dawsonella Mecki. Whitfield, Am. Jour. Sci. (3), vol. 21, p. 127, figs. 5, 6. 1883. Dawsonella mecki. White, 3d Ann. Rep. U. S. Geol. Surv., p. 453, pl. 2, tigs. 3, 4.

# DEUADOCRINUS Wachsmuth and Springer, 1879.

### Decadocrinus ægina Hall.

1864. Scaphiocrinus (Poteriocrinus) agina. Hall, 17th Rep., N. Y. State Cab. Nat. Hist., p. 57.

Waverly Group: Richfield, Ohio.

1875. Scaphiorinus (Poteriocrinus) agina. Hall and Whitfield, Pal. Ohio, vol. 2, p. 174, pl. 12, figs. 11, 12.

Waverly Group: Richfield, Ohio.

# Decadocrinus bayensis Meek and Worthen.

1865. Poteriocrinus (Scaphiocrinus) Bayensis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 157.

Chester Group: Bay City, Pope County, Illinois.

1873. Scaphiocrinus Bayensis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 550, pl. 20, fig. 2.

Chester Group: Bay City, Pope County, Illinois.

# Decadocrinus columbiensis Worthen.

1882. Poteriocrinus columbiensis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 22.

Chester L. S.: Near Columbia, Monroe County, Illinois.

1883. Poteriocrinus Columbiensis. Worthen, Geol. Surv. Ill., vol. 7, p. 293, pl. 29, fig. 6.

Chester L. S.: Near Columbia, Monroe County, Illinois.

# Decadocrinus depressus Meek and Worthen.

1870. Scaphiocrinus depressus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 27.

Keokuk Group: Crawfordsville, Indiana.

1873. Scaphiocrinus depressus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 492, pl. 14, fig. 8.

Keokuk Group: Crawfordsville, Indiana.

#### Decadocrinus fiscellus Meek and Worthen.

1869. Scaphiocrinus fiscellus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 146.

Lower Burlington L. S.: Burlington, Iowa.

1873. Scaphiocrinus fiscellus. Meek and Worthen, Geol. Surv Ill., vol. 5, p. 424, pl. 1, fig. 3.

Burlington L. S.: Burlington, Iowa.

### Decadocrinus fountainensis Worthen.

1882. Poteriocrinus fountainensis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 17.

St. Louis L. S.: Fountain Creek, Monroe County, Illinois.

1883. Poteriocrinus Fountainensis. Worthen, Geol. Surv. Ill., vol. 7, p. 286, pl. 30, fig. 11.

St. Louis L. S.: Fountain Creek, Monroe County, Illinois.

#### Decadocrinus halli Hall.

1861. Scaphiocrinus halli. Hall, Desc. New Spec. Crin., p. 7. Burlington, L. S.

1861. Scaphiocrinus Halli. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 308. Burlington L. S.: Burlington, Iowa.

#### Decadocrinus juvenis Meek and Worthen.

1869. Scaphiocrinus juvenis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 146.

Lower Burlington L. S.: Burlington, Iowa.

# Decadocrinus juvenis Meek and Worthen-Continued.

1873. Scaphicorinus juvenis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 417, pl. 2, fig. 8.

Burlington L. S.: Burlington, Iowa.

# Decadocrinus lyriope Hall.

1864. Scaphiorinus (Poteriocrinus) lyriope. Hall, 17th Rep. N. Y. State Cab. Nat. Hist., p. 58.

Waverly Group: Richfield, Ohio.

1875. Scaphiocrinus (Poteriocrinus) lyriope. Hall and Whitfield, Pal. Ohio, vol. 2, p. 175, pl. 12, fig. 10.
Waverly Group: Richfield, Ohio.

# Decadocrinus milleri Wetherby.

1881. Poteriocrisus milleri. Wetherby, Jour. Cinn. Soc. Nat. Hist., vol. 3, p. 330, pl. 9, figs. 12, 13.
Kaskaskia Group: Pulaski County, Kentucky.

# Decadocrinus pencilliformis Worthen.

1882. Poteriocrinus pencilliformis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 9.

Upper Keokuk L. S.: Hamilton, Illinois.

1883. Poteriocrinus pencilliformis. Worthen, Geol. Surv. Ill., vol. 7, p. 276, pl. 28, fig. 9.
Keokuk L. S.: Hamilton, Illinois.

# Decadocrinus pleias Hall.

1864. Poteriocrinus pleias. Hall, 17th Rep. N. Y. State Cab. Nat. Hist., p. 57. Waverly Group: Richfield, Ohio.

1875. Poteriorinus ploias. Hall and Whitfield, Pal. Ohio, vol. 2, p. 173, pl. 12, fig. 8.

Waverly Group: Richfield, Ohio.

# Decadocrinus scalaris Meek and Worthen.

1869. Scaphiocrinus scalaris. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 145.

Upper Burlington L. S.: Burlington, Iowa.

1873. Scaphiocrinus scalaris. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 421, pl. 2, fig. 10.
Burlington L. S.: Burlington, Iowa.

#### Decadocrinus stimpsoni Lyon.

1869. Zeacrinus Stimpsoni. Lyon, Trans. Am. Phil. Soc., vol. 8, p. 465, pl. 27, figs. m, m1.
Subcarboniferous: Kentucky.

### Decadocrinus subtortuosus Hall.

1864. Scaphiocrinus subtortuosus. Hall, 17th Rep. N. Y. State Cab. Nat. Hist., p. 59.
Waverly Group: Richfield. Ohio.

1875. Scaphiocrinus subtortuosus. Hall and Whitfield, Pal. Ohio, vol. 2, p. 177, pl. 12, figs. 15, 16.

Waverly Group: Richfield, Ohio.

# (DELOCRINUS Miller and Gurley, 1890.)

Delocrinus hemisphericus. See Ceriocrinus hemisphericus.

Delocrinus missouriensis. See Ceriocrinus missouriensis.

# (DENTALINA D'Orbigny, 1826.)

Dentalina priscilla. See Nodosinella priscilla.

## DENTALIUM Linnæus, 1740.

# Dentalium acutisulcatum Gurley.

1883. Dentalium acutisulcatum. Gurley, New Carb. Foss., Bull. No. 1, p. 7.

Lower Coal Measures: Newport, Vermilion County, Illinois.

#### Dentalium annulostriatum Meek and Worthen.

1870. Dentalium annulostriatum. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 45.

Coal Measures: Danville, Illinois.

1873. Dentalium? annulostriatum. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 589, pl. 29, fig. 7.

Coal Measures: Danville, Illinois.

1888. Dontalium annulostriatum. Keyes, Proc. Acad. Nat. Sci. Phil., p. 234. Lower Coal Measures: Des Moines, Iowa.

1891. Dentalium annulostriatum. Keyes, Proc. Acad. Nat. Sci. Phil., p. 251. Lower Coal Measures: Des Moines. Iowa.

# Dentalium? barquense Winchell.

1862. Dentalium? Barquense. Winchell, Proc. Acad. Nat. Sci. Phil., p. 425. Marshall Group: Pointe aux Barques, Michigan.

1865. Dentalium? Barquense. Winchell, Proc. Acad. Nat. Sci. Phil., p. 131.
Marshall Group: Pointe aux Barques, Michigan.

# Dentalium canna White.

1874. Dentalium canna. White, Prelim. Rep. Inv. Foss., p. 23.

Carboniferous (Coal Measures): Near Salt Lake, New Mexico, and near Relief Spring, Arizona.

1877. Dentalium canna. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 156, pl. 12, figs. 6a, b.

Carboniferous: Near Salt Lake, New Mexico, and near Relief Spring, Arizona.

# Dentalium grandævum Winchell.

1863. Dentalium grandævum. Winchell, Proc. Acad. Nat. Sci. Phil., p. 18. Yellow Sandstone: Burlington, Iowa.

### Dentalium granvillense Herrick.

1888. Dentalium granvillensis. Herrick, Bull. Den. Univ., vol. 3, p. 92. Waverly Group: Licking County, Ohio.

# Dentalium illinoiense Worthen.

1883. Dentalium Illinoiensis. Worthen, Geol. Surv. Ill., vol. 7, p. 325. Chester L. S.: Chester, Illinois.

1890. Dentalium illinoiense. Worthen, Geol. Surv. Ill., vol. 8, p. 145, pl. 23, fig. 1.

## Dentalium meekanum Geinitz.

1866. Dentalium Meekianum. Geinitz, Carb. und Dyas in Nebr., p. 13, tab. 1, fig. 20. Nebraska City, Nebraska.

1872. Dentalium Meekianum. Meek, U. S. Geol. Surv. Nebr., p. 224, pl. 11, figs. 16a, b.

Upper Coal Measures: Nebraska City, Nebraska.

1873. Dentalium Meekianum? Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 590, pl. 29, fig. 8.
Coal Measures: Danville, Illinois.

1888. Dentalium meckianum. Keyes, Proc. Acad. Nat. Sci. Phil., p. 234. Lower Coal Measures: Des Moines, Iowa.

1891. Dentalium meekianum. Keyes, Proc. Acad. Nat. Sci. Phil., p. 251. Lower Coal Measures: Des Moines, Iowa.

#### Dentalium meekanum Geinitz-Continued.

- 1894. Dentalium meekianum. Keyes, Mo. Geol. Surv., vol. 5, p. 133. Upper Coal Measures: Kansas City, Missouri.
- 1897. Dentalium conf. meekianum. Smith, Proc. Am. Phil. Soc., vol. 35, p. 38. Upper Coal Measures: Crawford County, Arkansas.

#### Dentalium missouriense Swallow.

- 1863. Dentalium Missouriense. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 99. Archimedes L. S.: Chester, Illinois; and St. Marys, Missouri.
- 1894, Dentalium missouriense. Keyes, Mo. Geol. Surv., vol. 5, p. 133. Kaskaskia L. S.: Ste. Mary, Missouri.

#### Dentalium obsoletum. See Dentalium sublæve.

### Dentalium primarium Hall.

- 1858. Dentalium primarium. Hall. Geol. Iowa, vol. 1, pt. 2, p. 608, pl. 23, fig. 16. Warsaw L. S.: Hancock County, Illinois.
- 1894. Dentalium primarium. Keyes, Mo. Geol. Surv., vol. 5, p. 133. Keokuk L. S.: Warsaw, Illinois.

#### Dentalium sublæve Hall.

1858. Dentalium obsoletum. Hall, Geol. Iowa, vol. 1, pt. 2, p. 724, pl. 29, figs. 16, 17, 170

Coal Measures.

- 1877. Dentalium sublaeve. Hall, Miller's Am. Pal. Foss., p. 244.
  1891. Dentalium sublære. Keyes, Proc. Acad. Nat. Sci. Phil., p. 252. Lower Coal Measures: Des Moines, Iowa,

# Dentalium venustum Meek and Worthen.

- 1861. Dentalium renustum. Meek and Worthen, Proc. Acad. Nat. Sci. Phil.,
  - St. Louis L. S.: Waterloo, Monroe County, Illinois.
- 1866. Dentalium venustum. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 284, pl. 19, fig. 8. St. Louis Group: Waterloo, Monroe County, Illinois.

## Dentalium (species undetermined.)

- 1868. Dentalium (2 species). Dawson, Acad. Geol., p. 309. Carboniferous L. S.: Economy and Pugwash, Nova Scotia.
- 1887. Dentalium sp. ? Herrick, Bull. Den. Univ., vol. 2, p. 146, pl. 14, fig. 12. Coal Measures: Flint Ridge, Ohio.

## DERBYA Waagen, 1884.

# Derbya affinis Hall and Clarke.

- 1892. Derbya affinis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, p. 349, pl. 11 B, figs. 45. (Included with D. cymbula in explanation of pl. 11 B.) Upper Coal Measures: Near Kansas City, Missourl.
- 1897. Derbya affinis. Hall, 14th Rep. N. Y. State Geol., p. 349, pl. 5, figs. 10, 11. Upper Coal Measures: Near Kansas City, Missouri.

## Derbya bennetti Hall and Clarke.

- 1892. Derbya Bennetti. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, p. 348, pl. 11A, figs. 34-39
  - Upper Coal Measures: Near Kansas City, Missouri.
- 1892. Derbya Bennetti. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 17,
  - Upper Coal Measures: Kansas City, Missouri.
- 1897. Derbya Bennetti. Hall, 14th Rep. N. Y. State Geol., p. 347, pl. 5, figs. 3-8. Upper Coal Measures: Near Kansas City, Missouri.

### Derbya biloba Hall.

1883. Streptorhynchus biloba. Hall, Rep. N. Y. State Geol. for 1882, pl. (11) 41, figs. 4, 5.

Coal Measures: Winterset, Iowa.

1892. Derbya (?) biloba. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, p. 350, pl. 11, figs. 4, 5.

Coal Measures: Winterset, Iowa.

1897. Derbya (†) biloba. Hall, 14th Rep. N. Y. State Geol., p. 350, pl. 5, figs. 17, 18. Upper Coal Measures: Winterset, Iowa.

# Derbya broadheadi Hall and Clarke.

1892. Derbya Broadkeadi. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, p. 347, pl. 11A, figs. 23, 24.

Upper Coal Measures: Kansas City, Missouri.

1897. Derbya Broadheadi. Hall, 14th Rep. N.Y. State Gool., p. 346, pl. 5, figs. 15, 16. Upper Coal Measures: Near Kansas City, Missouri.

#### Derbya costatula Hall and Clarke.

1892. Derbya (?) coetatula. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, p. 346, pl. 11B, figs. 16, 17.

Chester L. S.: Crittenden County, Kentucky.

1897. Derbya? costatula. Hall, 14th Rep. N. Y. State Geol., p. 346, pl. 5, fig. 9. Chester L. S.: Crittenden County, Kentucky.

## Derbya crassa Meek and Hayden.

- 1852. Orthis umbraculum? Hall, Stansb. Exped. Gt. Salt Lake, p. 412, pl. 3, fig. 6. Carboniferous: Missouri River, above Fort Leavenworth.
- 1852. Orthis umbraculum? Owen, Geol. Rep. Wis., Iowa, and Minn., pl. 5, fig. 11. Carboniferous: Missouri River, near mouth of Keg Creek, and at Council Bluffs.
- 1852. Orthis arachnoidea. Roemer, Kreid. von Texas, p. 89, taf. 1, figs. 9a, b. Carboniferous: San Saba Valley, Texas.
- 1858. Orthisina crassa. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 261. Coal Measures: Leavenworth, Kansas.
- 1858. Orthis crenistria. Marcou, Geol. N. A., p. 49. Mountain L. S.: Pecos Village, New Mexico.
- 1859. Orthisina crassa. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 26. Coal Measures: Leavenworth, Kansas.
- 1859. Orthisina umbraculum? Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 26.

Upper Coal Measures: Fort Riley and Cottonwood Creek, Kansas.

- 1860. Orthis lasallensis. McChesney, Desc. New Pal. Foss., p. 32.
  Upper Coal Measures: Lasalle, Illinois.
- 1860. Orthis richmonda. McChesney, Desc. New Pal. Foss., p. 32. Coal Measures: 12 miles northwest of Richmond, Missouri.
- 1860. Orthis pratteni. McChesney, Desc. New Pal. Foss., p. 32. Coal Measures: Charbonier, Missouri.
- 1861. Streptorhynchus umbraculum. Newberry, Ives' Colo. Expl. Exped., p. 125. Upper Carboniferous (Cherty L. S.): Canyon of Cascade River near the junction of the Colorado Chiquito with the Colorado; at Agua Azul; east of Fort Defiance; at Santa Fe; at Ojo Vernal; and on Cottonwood Creek, Kansas.
- 1864. Hemipronites crassus. Meek and Hayden, Pal. Upper Mo., p. 26, pl. 1, figs. 7a-d.

Coal Measures: Leavenworth City, Kansas.

- 1865. Orthis richmondi. McChesney, Ill. ew. Spec. Foss., pl. 1, figs. 5a-c.
- 1865. Orthis lasallensis. McChesney, Ill. New. Spec. Foss., pl. 1, figs. 6a, b.

Derbya crassa Meek and Hayden—Continued.

- 1868. Hemipronites orassus. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 28, pl. 1, figs. 5a-c.
  - Coal Measures: 12 miles northeast of Richmond, Missouri.
- 1868. Hemipronites lasallensis. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 28, pl. 1, figs. 6a, b.

Upper Coal Measures: Lasalle, Illinois.

- 1872. Hemipronites orassus. Meek, U. S. Geol. Surv. Nebr., p. 174, pl. 5, figs. 10a-c; pl. 8, fig. 1.
  - Upper Coal Measures: Nebraska City, Bennett's Mill, Wyoming, Cedar Bluff, Rock Bluff, Plattsmouth, Bellevue, Omaha, Peru, Rulo, and Brownsville, Nebraska.
  - Coal Measures: Kansas; Iowa; Missouri; Illinois.

Chester L. S.: West Virginia.

- 1873. Hemipronites crassus. Meek and Worthen, Geol. Surv. Ill., vel. 5, p. 570, pl. 25, fig. 12.
  Upper Coal Measures: Lasalle, Illinois.
- 1876. Hemipronites orenistria. White, Powell's Rep. Geol. Uinta Mts., p. 90.

  Lower Aubrey Group: Near Echo Park, and at confluence of Grand and

  Green rivers. Utah.

Upper Aubrey Group: Beehive Point, near Horseshoe Canyon, Utah.

- 1877. Hemipronites orenistria. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 124, pl. 10, fig. 9a.
  - Carboniferous: Meadow Creek, south of Fillmore; Star District, Picacho range; North Fork of Lewiston Canyon, Oquirrh range; below Ophir City; Kanab Canyon, Wasatch range; pass between Rush and Cedar Valleys; and east side of Mount Nebo, Utah; top of Grass Mountain, Ely range; Fossil Hill; Camp Apache; Old Potosi Mine; Tenney's Ranch; Kaibab Plateau; and at confluence of White Mountain and Black rivers. Nevada.
- 1883. Streptorhynchus Richmondi. Hall, Rep. N. Y. State Geol. for 1882, pl. (10) 40, figs. 10, 11. Coal Measures: Iowa.
- 1884. Hemipronites crassus. White, 13th Rep. Geol. Surv. Ind., p. 129, pl. 26, figs. 4-11.
  - Coal Measures: Lodi, Eugene, Perrysville, Merom, Big Creek, and New Harmony, Indiana.
- 1887. Hemipronites orassus. Herrick, Bull. Den. Univ., vol. 2, p. 50, pl. 2, fig. 19. Coal Measures: Flint Ridge, Ohio.
- 1888. Streptorhynchus orenistria. Keyes, Proc. Acad. Nat. Sci. Phil., p. 229. Lower Coal Measures: Des Moines, Iowa.
- 1891. Streptorhynchus orassum. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 580, pl. 13, figs. 11, 12.
  Maxville L. S.: Ohio.
- 1892. Derbya crassa. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 17, figs. 1-4, 9.
  - Upper Coal Measures: Kansas City, Missouri; Winterset, Iowa.
- 1892. Derbya orassa. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 10, figs. 10, 11; pl. 11A, figs. 28-33; pl. 11B, figs. 23, 24; pl. 20, figs. 12, 13.
- Upper Coal Measures: Near Kansas City, Missouri, and Winterset, Iowa. 1894. Streptorhynchus crenistria. Keyes, Mo. Geol. Surv., vol. 5, p. 67, pl. 38, figs. 8a-h.
  - Coal Measures: Kansas City, Clinton, and Lexington, Missouri.
- 1895. Streptorhynchus crassum. Whitfield, Geol. Surv. Ohio, vol. 7, p. 468, pl. 9, figs. 11, 12.
  - Maxville L. S.: Ohio.

### Derbya crassa Meek and Hayden-Continued.

1897. Derbya crassa. Smith, Proc. Am. Phil. Soc., vol. 35, p. 28.
Upper Coal Measures: Poteau Mountain, Indian Territory.
Lower Coal Measures: Conway County, Arkansas.

# Derbya cymbula Hall and Clarke.

1892. Derbya cymbula. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, p. 348, pl. 11B, figs. 2, 3.

Upper Coal Measures: Near Kansas City, Missouri.

1897. Derbya cymbula Hall, 14th Rep., N. Y. State Geol., p. 348, pl. 6, figs. 1, 2. Upper Coal Measures: Near Kansas City, Missouri.

# Derbya kaskaskiensis McChesney.

1860. Orthis kaskaskiensis. McChesney, Desc. New Pal. Foss., p. 31. Kaskaskia L. S.: Kaskaskia and Chester, Illinois.

1892. Derbya kaskaskiensis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 11B, fig. 6.
Chester L. S.: Crittenden County, Kentucky.

#### Derbya keckuk Hall.

1858. Orthis keokuk. Hall, Geol. Iowa, vol. 1, pt. 2, p. 640, pl. 19, figs. 5a, b. Keokuk L. S.: Keokuk, Iowa; Warsaw and Nauvoo, Illinois.

1883. Streptorhynchus keokuk. Hall, Rep. N. Y State Geol. for 1882, pl. (11) 41, figs. 1-3.
Keokuk Group: New Providence, Indiana; Keokuk, Iowa.

1890. Orthis keokuk. Gordon, Am. Geol., vol. 5, p. 261, pl. fig. 7. Keokuk Group.

1892. Derbya Keukuk. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 11, figs. 1-3. Keokuk beds: Keokuk, Iowa; New Providence, Indiana.

1894. Orthis keokuk. Keyes, Mo. Geol. Surv., vol. 5, p. 63. Keokuk L. S.: Wayland, Missouri.

## Derbya robusta Hall.

1858. Orthis robusta. Hall, Geol. Iowa, vol. 1, pt. 2, p. 713, pl. 28, figs. 5a-d.

Lower Coal Measures: St. Clair County, Illinois.

1883. Streptorhynchus robustus. Hall, Rep. N. Y. State Geol. for 1882, pl. (10) 40, figs. 12-16.

Coal Measures: Illinois.

1892. Derbya robusta. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 10, figs. 12-17. Coal Measures: St. Clair County, Illinois.

1892. Derbya robusta (†) Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 11B, figs. 7, 8. . Upper Coal Measures: Winterset, Iowa; near Kansas City, Missouri.

## Derbya ruginosa Hall and Clarke.

1892. Derbya ruginosa. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, p. 346, pl. 11A, figs. 25-27.

Keokuk L. S.: New Providence, Indiana.

1897. Derbya ruginosa. Hall, 14th Rep. N. Y. State Geol., p. 345, pl. 5, figs. 12–14. Keokuk L. S.: New Providence, Indiana.

## Derbya (species undetermined).

1892. Derbya sp. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 11B, fig. 1. Upper Coal Measures: Kansas City, Missouri.

## DEXIOBIA Winchell, 1863.

# Dexiobia halli Winchell.

1863. Dexiobia Halli. Winchell, Proc. Acad. Nat. Sci. Phil., p. 11. Yellow S. S.: Burlington, Iowa.

#### Dexiobia ovata Hall.

- 1858. Cardiomorpha ovata. Hall, Geol. Iowa, vol. 1, pt. 2, p. 522, pl. 7, figs. 10a-c. Chemung Group: Burlington, Iowa.
- 1888. Cardiopsis (Dexiobia?) ovata. Herrick, Bull. Den. Univ., vol. 4, p. 38, pl. 4, figs. 5-7.

Waverly Group: Ohio.

- 1889. Dexiobia ovata. Herrick, Am. Geol., vol. 3, pl. 2, figs. 5-7.
  1895. Dexiobia ovata. Herrick, Geol. Surv. Ohio, vol. 7, pl. 16, fig. 5-7. Kinderhook: Gann and Newark, Ohio.

# Dexiobia whitei Winehell.

1863. Dexiobia Whitei. Winchell, Proc. Acad. Nat. Sci. Phil., p. 11. Yellow S. S.: Burlington, Iowa.

# DICHOCRINUS Münster, 1839.

# Dichocrinus angustus White.

- 1862. Dichocrinus angustus. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 19. Upper Burlington L.S.: Burlington, Iowa.
- 1897. Dichoorinus angustus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 768, pl. 76, fig. 11. Upper Burlington L. S.: Near Burlington, Iowa.

#### Dichocrinus blairi Miller.

1891. Dichocrinus blairi. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 36, pl. 8, fig. 12.

Keokuk Group: Boonville, Missouri.

- 1892. Dichoorinus blairi. Miller, 17th Rep. Geol. Surv. Ind., p. 646, pl. 8, fig. 12. Keokuk Group: Boonville, Missouri.
- 1894. Dichocrinus blairi. Keyes, Mo. Geol. Surv., vol. 4, p. 205, pl. 25, fig. 7. Keokuk L. S.: Boonville, Missouri.
- 1897. Dichocrinus Blairi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 778, pl. 75, fig. 3.

Warsaw L. S.: Boonville, Missouri.

# Dichocrinus bozemanensis Miller and Gurley.

1897. Dichocrinus bozemanensis. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 44, pl. 3, fig. 4.

Burlington or Keokuk Group: Bridger Mountains, near Bozeman, Montana

# Dichocrinus chesterensis. See Pterotocrinus chesterensis.

#### Dichocrinus cinctus Miller and Gurley.

1890. Dichocrinus cinctus. Miller and Gurley, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 21, pl. 4, figs. 10-12.

Kinderhook Group: Legrand, Iowa.

1890. Dichocrinus cinctus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 342, pl. 4. figs. 10-12.

Kinderhook Group: Legrand, Iowa.

1897. Dichocrinus cinctus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 764, pl. 75, fig. 5, pl. 77, figs. 4a-c, Kinderhook Group: Legrand, Marshall County, Iowa.

# Dichocrinus constrictus Meek and Worthen.

1860. Dichocrinus constrictus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil.,

Warsaw L. S.: Bloomington, Indiana.

- 1866. Dichocrinus constrictus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 263, pl. 19, figs. 2a-o.
  - St. Louis Group: Bloomington, Indiana.

## Dichocrinus conus Meek and Worthen.

- 1860. Dichocrinus conus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 381. Burlington L. S.: Cedar Creek, Warren County, Illinois.
- 1866. Dichocrinus conus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 169, pl. 16, figs. 5a, b.

Burlington L. S.: Burlington, Iowa.

1897. Dichocrinus conus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 770, pl. 75, fig. 6.

Lower Burlington L. S.: Burlington, Iowa.

# Dichocrinus cornigerus. See Talarocrinus cornigerus.

#### Dichocrinus coxanus Worthen.

- 1882. Dichocrinus coxanus. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 35. Upper Kcokuk L. S.: Hamilton, Illinojs.
- 1883. Dichocrinus Coxanus. Worthen, Geol. Surv. Ill., vol. 7, p. 313, pl. 27, fig.7. Keokuk L. S.: Hamilton, Illinois.
- 1897. Dichocrinus coxanus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 763, pl. 76, fig. 9.

Keokuk L. S.: Hamilton, Illinois.

#### Dichocrinus crassitestus White.

- 1862. Dichocrinus crassitestus. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 19.
  Upper Burlington L. S.: Burlington, Iowa.
- 1897. Dichocrinus crassitestes. Wachsmuth and Springer, N. Am. Crin. Cam., p. 769, pl. 76, figs. 6a-c.

Upper Burlington.L. S.: Burlington, Iowa.

### Dichocrinus crassus. See Pterotocrinus crassus.

## Dichocrinus delicatus Wachsmuth and Springer.

1897. Dichocrinus delicatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 766, pl. 77, fig. 13.

Kinderhook Group: Marshall County, Iowa.

Lower Burlington L. S.: Burlington, Iowa.

#### Dichocrinus dichotomus Hall.

1860. Dichocrinus dichotomus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 85, pl. 1, fig. 5.

Warsaw L. S.: Warsaw, Illinois.

1897. Dichocrinus dichotomus. Wachsmuth and Springer, N. Am. Crin. Cam., p.777. Warsaw L. S.: Warsaw, Illinois.

## Dichocrinus elegans. See Talarocrinus symmetricus.

Dichocrinus expansus. See Dichocrinus polydactylus.

## Dichocrinus ficus Lyon and Casseday.

- 1862. Dichocrinus ficus. Lyon and Casseday, Proc. Am. Acad. Arts and Sci. Bost., vol. 5, p. 24.
  - Subcarboniferous L. S.: Clear Creek, Hardin County, Kentucky; Montgomery County, Indiana.
- 1873. Dichocrinus ficus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 502, pl. 14, fig. 5.

Keokuk Group: Crawfordsville, Indiana.

1875. Dichocrinus ficus. Meek and Worthen, Geol. Surv. Ill., vol. 6, p. 515, pl. 29, fig. 7.

Keokuk Group: Crawfordsville, Indiana.

- 1894. Dichocrinus ficus. Keyes, Mo. Geol. Surv., vol. 4, p. 204. Keokuk L. S.: Boonville, Missouri; Keokuk, Iowa.
- 1897. Dichocrinus ficus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 774, pl. 78, figs. 16a, b.

Keokuk L. S.: Crawfordsville, Indiana; Hardin County, Kentucky.

## Dichocrinus hamiltonensis Worthen.

- 1882. Dichocrinus kamiltonensis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 35.
  - Upper Keokuk Group: Hamilton, Illinois.
- 1883. Dichoorinus Hamiltonensis. Worthen, Geol. Surv. Ill., vol. 7, p. 313, pl. 27, fig. 10.
  - Keokuk L. S.: Hamilton, Illinois.
- 1897. Dichocrinus Hamiltonensis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 772, pl. 76, fig. 10.
  Keokuk Group: Hamilton, Illinois.

# Dichocrinus humbergi Miller.

- 1891. Dichocrinus Humbergi. Miller, Bull. Geol. Surv. Mo., No. 4, p. 26, pl. 3, figs. 9, 10.
  - Keokuk Group: Boonville, Missouri.
- 1891. Dichocrinus humbergi. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 36, pl. 6, fig. 38.
- Keokuk Group: Boonville, Missouri.
- 1892. Dichocrinus humbergi. Miller, 17th Rep. Geol. Surv. Ind., p. 646, pl. 6, fig. 38. Keokuk Group: Boonville, Missouri.
- 1897. Dichocrinus Humburgi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 777. Warsaw L. S.: Boonville, Missouri.

# Dichocrinus huntsvillæ Wachsmuth and Springer.

- 1897. Dichocrinus Huntevilla. Wachsmuth and Springer, N. Am. Crin. Cam., p. 773, pl. 75, fig. 4.
  - St. Louis Group: Huntsville and Whitesburg, Alabama.

## Dichocrinus inornatus Wachsmuth and Springer.

- 1890. Dichocrinus inornatus. Wachsmuth and Springer, Geol. Surv. Ill., vol. 8, p. 190, pl. 16, figs. 1, 2.
  - Kinderhook Group: Legrand, Iowa.
- 1897. Diohoorinus inornatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 770, pl. 77, figs. 12a, b. Kinderhook Group: Legrand, Marshall County, Iowa.

#### Dichocrinus lachrymosus Hall.

- 1860. Dichocrinus lachrymosus. Hall, Supp., vol. 1, pt. 2, Geol. Rep. Ia., p. 84. Burlington L. S.: Burlington, Iowa.
- 1872. Dichocrinus lachrymosa. Hall, Photo. Plates of Crinoids, pl. 2, fig. 11
- 1897. Dichocrinus lachrymosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 754, pl. 77, figs. 2a-c. Upper Burlington L. S.: Burlington, Iowa.

#### Dichocrinus lævis Hall.

- 1860. Dichocrinus lavis. Hall, Supp., vol. 1, pt. 2, Geol. Rep. Ia., p. 83. Burlington L. S.: Burlington, Iowa.
- 1897. Dichoorinus lœvis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 765, pl. 77, figs. 7a-c.
  Lower Burlington L. S.: Burlington, Iowa.

#### Lower Durington D. S.. Durington, 10

- Dichocrinus lineatus Meek and Worthen.
  - 1869. Dichocrinus lineatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 69. Lower Burlington L. S.: Burlington, Iowa.
  - 1873. Dichocrinus lineatus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 440, pl. 3, fig. 1.
    - Burlington L. S.: Burlington, Iowa.
  - 1894. Dichocrinus lineatus. Keyes, Mo. Geol. Surv., vol. 4, p. 203. Lower Burlington L. S.: Hannibal and Louisiana, Missouri.

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# Dichocrinus lineatus Meek and Worthen-Continued.

1897. Dichocrinus lineatus. Wachsmuth and Springer, N. Am. Crin. Cam, p. 761, pl. 76, figs. 4a-c.

Lower Burlington L.S.: Burlington, Iowa.

#### Dichocrinus liratus Hall.

1861. Dichocrinus liratus. Hall, Desc. New Spec. Crin., p. 5. Burlington L. S.

1861. Dichocrinus liratus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 290. Burlington L. S.: Burlington, Iowa.

1872. Dichocrinus liratus. Hall, Photo. Plates of Crinoids, pl. 2, figs. 7, 8.

1894. Dichocrinus liratus. Keyes, Mo. Geol. Surv , vol. 4, p. 203. Upper Burlington L. S.: Ash Grove, Missouri.

1897. Dichocrinus liratus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 759, pl. 76, fig. 8; pl. 77, figs. 3a, b.
Upper Burlington L. S.: Burlington, Iowa.

# Dichocrinus oblongus Wachsmuth and Springer.

1897. Dichocrinus oblongus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 759, pl. 77, fig. 9.

Warsaw L. S.: Near Bloomington, Indiana.

# Dichocrinus ornatus Wachsmuth and Springer.

1862. Dichocrinus sculptus. Lyon and Casseday, Proc. Am. Acad. Arts and Sci. Bost., vol. 5, p. 25 (not D. sculptus DeK. and LeH., 1853).

Carboniferous: Hardin County, Kentucky.

1881. Dichocrinus ornatus. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil., p. 258 (Rev. Palæocr. II, p. 84).

1897. Dichocrinus ornatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 762, pl. 77, fig. 6.

St. Louis Group: Hardin County, Kentucky; Mount Pleasant, Iowa.

## Dichocrinus ovatus Owen and Shumard.

1850. Dichocrimus ovatus. Owen and Shumard, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 61, pl. 7, fig. 9.
Carboniferous L. S.: Burlington, Iowa.

1852. Dickocrinus ovatus. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 590, tab. 5A, figs. 9a, b.

Carboniferous L. S.: Burlington, Iowa.

1897. Dichocrinus ovatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 760, pl. 76, fig. 7, pl. 77, figs. 8a, b.

Lower Burlington L. S.: Burlington, Iowa.

#### Dichocrinus parvulus Miller.

1891. Dickoorinus parvulus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 27, pl. 4, figs. 7, 8.

Keokuk Group: Boonville, Missouri.

1897. Dichocrinus parvulus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 778. Warsaw L. S.: Boonville, Missouri.

### Dichocrinus pendens Wachsmuth and Springer.

1897. Dichocrinus pendens. Wachsmuth and Springer, N. Am. Crin. Cam., p. 774. pl. 78, fig. 15.

Upper Burlington L. S.: Burlington, 'owa.

## Dichocrinus pentalobus Lyon and Casseday.

1862. Cotyledonocrinus pentalobus. Lyon and Casseday, Proc. Am. Acad. Arts and Sci. Bost., vol. 5, p. 26.

Carboniferous: Grayson Springs, Grayson County, Kentucky.

1897. Dichocrinus pentalobus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 775, pl. 78, figs. 11a-c.

Kaskaskia Group: Grayson Springs and Sloan's Valley, Kentucky.

# Dichocrinus pisum Meek and Worthen.

- 1869. Dicheorinus pisum. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 69. Upper Burlington L. S.: Burlington, Iowa.
- 1873. Dichoorinus pisum. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 441, pl. 3, fig. 2.

Burlington L. S.: Burlington, Iowa.

1897. Dichocrinus pisum. Wachsmuth and Springer, N. Am. Crin. Cam., p. 763, pl. 76, fig. 5, pl. 77, fig. 10.
Lower Burlington L. S.: Burlington, Iowa.

## Dichocrinus plicatus Hall.

- 1861. Dichocrinus plicatus. Hall, Desc. New Spec. Crin., p. 4. Burlington L. S.
- 1861. Dichecrinus plicatus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 288. Burlington L. S.: Burlington, Iowa.
- 1872. Dichocrinus plicatus. Hall, Photo Plates of Crinoids, pl. 2, figs. 9, 10.
- 1897. Dichocrinus plicatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 758, pl. 77, figs. 5a, b.
  Upper Burlington L. S.: Burlington, Iowa.

# Dichocrinus pocillum. See Dichocrinus scitulus.

# Dichocrinus polydactylus Lyon and Casseday.

1862. Dichocrinus polydactylus. Lyon and Casseday, Proc. Am. Acad. Arts and Sci. Bost., vol. 5, p. 18.

Keokuk Group: Hardin County, Kentucky; Montgomery County, Indiana.

1868. Dichoorinus expansus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 343.

Keokuk Group: Crawfordsville, Indiana.

1873. Dichocrinus expansus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 500, pl. 14, fig. 1.

Keokuk Group: Crawfordsville, Indiana.

1897. Dichocrinus polydactylus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 756, pl. 77, figs. 1a, b. Keokuk L. S.: Crawfordsville, Indiana.

#### Dichocrinus protuberans. See Pterotocrinus protuberans.

# Dichocrinus scitulus Hall.

- 1861. Dickoorinus scitulus. Hall, Desc. New Spec. Crin., p. 4. Burlington L. S.
- 1861. Dichocrinus pocillum. Hall, Desc. New Spec. Criu., p. 5. Burlington L. S.
- 1861. Dichocrinus sciulus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 289. Burlington L. S.: Burlington, Iowa.
- 1861. Dichocrinus pocillum. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 291. Burlington L. S.: Burlington, Iowa.
- 1872. Dichocrinus pocillum. Hall, Photo. Plates of Crinoids, pl. 2, figs. 14, 16, 17.
- 1872. Dichocrinus scitulus. Hall, Photo. Plates of Crinoids, pl. 2, figs. 12, 13.
- 1897. Dichocrinus scitulus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 767, pl. 78, figs. 13a, b, 14.
  Upper and Lower Burlington L. S.: Burlington, Iowa.

Dichocrinus sculptus. See Dichocrinus ornatus.

Dichocrinus sexlobatus. See Talarocrinus sexlobatus.

Dichocrinus simplex. See Talarocrinus simplex.

## Dichocrinus striatus Owen and Shumard.

1850. Dichocrinus striatus. Owen and Shumard, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 62, pl. 7, fig. 10.

Carboniferous L. S.: Burlington, Iowa.

1852. Dichocrinus striatus. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 590, tab. 5A, figs. 10a, b.
Carboniferous L. S.: Burlington, Iowa.

1894. Dichocrinus striatus. Keyes, Mo. Geol. Surv., vol. 4, p. 203, pl. 25, fig. 8. Upper Burlington L. S.: Ash Grove, Missouri.

1897. Dichocrinus striatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 577, pl. 77, figs. 11a, b.

Upper Burlington L. S.: Burlington, Iowa.

### Dichocrinus superstes Wachsmuth and Springer.

1897. Dichoorinus superstes. Wachsmuth and Springer, N. Am. Crin. Cam., p. 766, pl. 76, fig. 12.

Kaskaskia Group: Pulaski County, Kentucky; Huntsville, Alabama.

# Dichocrinus symmetricus. See Talarocrinus symmetricus.

# Dichocrinus ulrichi Miller and Gurley.

1890. Dichocrinus ulrichi. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 365, pl. 8, figs. 12, 13.
Keokuk Group: Bono, Indiana.

1897. Dichocrinus Ulrichi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 772. Keokuk Group: Bono, Lawrence County, Indiana.

## DICHOTRYPA Ulrich, 1890.

# Dichotrypa elegans Ulrich.

1890. Dichotrypa elegans. Ulrich, Geol. Surv. Ill., vol. 8, p. 500, pl. 76, figs. 8-8d.
St. Louis Group: Elizabethtown, Kentucky; Jersey and Monroe counties,
Illinois.

#### Dichotrypa expatiata Ulrich.

1890. Dichotrypa expatiata. Ulrich, Geol. Surv. Ill., vol. 8, p. 501. St. Louis Group: Alton, Illinois.

#### Dichotrypa flabellum Rominger.

1866. Fistulipora flabellum. Rominger, Proc. Acad. Nat. Sci. Phil., p. 122. Warsaw L. S.: Spergen Hill, Indiana.

1890. Dichotrypa flabellum. Ulrich, Geol. Surv. Ill., vol. 8, p. 501, pl. 77, figs. 1, 1b. St. Louis Group: Spergen Hill, Indiana.

## Dichotrypa intermedia Ulrich.

1890. Dichotrypa intermedia. Ulrich, Geol. Surv. Ill., vol. 8, p. 500, pl. 76, figs. 9-9c. St. Louis Group: Alton, Illinois; St. Louis, Missouri.

1894. Dichotrypa intermedia. Keyes, Mo. Geol. Surv., vol. 5, p. 18. St. Louis Group: St. Louis, Missouri.

## Dichotrypa lyroides Ulrich.

1890. Dichotrypa lyroides. Ulrich, Geol. Surv. Ill., vol. 8, p. 502, pl. 77, figs. 2-2b. St. Louis Group: Southern Kentucky.

# DICTYONEMA Hall, 1852.

# Dictyonema blairi Gurley.

1896. Dictyonema blairi. Gurley, Jour. Geol., vol. 4, p. 82. Chouteau L. S.: Sedalia, Missouri.

Bull. 153----15

# DIOTYOPHYTON Hall, 1863.

# Dictyophyton (Clathrospongia) abacus Hall.

1884. Dictyophyton (Clathrospongia) abacus. Hall, 35th Ann. Rep. N. Y. State Mus. Nat. Hist., p. 474, pl. 19, figs. 2-4.

Waverly Group: Warren, Pennsylvania.

Dictyophyton cattiliforme. See Phragmodictya catilliformis.

# Dictyophyton cylindricum Whitfield.

1881. Dictyophyton cylindricum. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 19, pl. 4, fig. 3.

Keokuk Group: Crawfordsville, Indiana.

1884. Divtyophyton cylindricum. Hall, 35th Rep. N. Y. State Mus. Nat. Hist., p. 475. Keokuk Group: Crawfordsville, Indiana.

Dictyophyton newberryi. See Thamnodictya newberryi.

# Dictyophyton randalli Hall.

1890. Dictyophyton Randalli. Hall, 9th Ann. Rep. N. Y. State Geol., p. 57. Waverly Group: Warren, Pennsylvania.

### Dictyophyton (?) redfieldi Hall.

1863. Dictyophyton redfieldi. Hall, 16th Rep. N. Y. State Cab. Nat. Hist., p. 88. Waverly Group: Harrisville and Richfield, Ohio.

1884. Dictyophyton (7) Redfieldi. Hall, 35th Rep. N.Y. State Mus. Nat. Hist., p. 474, pl. 18, fig. 9.

Waverly S. S.: Harrisville and Akron, Ohio.

# Dictyophyton sacculus Hall.

1863. Dictyophyton richfieldi? Hall, 16th Rep. N. Y. State Cab. Nat. Hist., pl. 4, fig. 6.

1884. Dictyophyton eacculum. Hall, 35th Rep. N. Y. State Mus. Nat. Hist., p. 473. Waverly S. S.: Richfield, Ohio.

# Dictyophyton tenue Hall.

1884. Dictyophyton tenue. Hall, 35th Rep. N. Y. State Mus. Nat. Hist., p. 474, pl. 19, fig. 5.

Waverly Group: Warren, Pennsylvania.

## DIDYMOPHLEPS Scudder, 1878.

## Didymophleps contusa Scudder.

1878. Termes contusus. Scudder, Proc. Bost. Soc. Nat Hist., vol. 19, p. 300. Coal Measures: Vermilion County, Illinois.

1885. Didymophleps contusa. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 330, pl. 29, fig. 6.

Carboniferous: Vermilion County, Illinois.

1890. Didymophleps contuss. Scudder, Foss. Insc. N. A., vol. 1, p. 294, pl. 15, fig.6. Carboniferous: Vermilion County, Illinois.

## DIECONEURA Scudder, 1884.

#### Dieconeura arcuata Scudder.

1885. Dieconeura arcuata. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 336, pl. 30, fig. 4.

Carboniferous: Mazon Creek, Illinois.

1890. Dieconeura arcusts. Scudder, Foss. Insc. N. A., vol. 1, p. 300, pl. 16, fig. 4. Carboniferons: Mazon Creek, Illinois.

### Dieconeura rigida Scudder.

- 1885. Disconsura rigida. Scudner, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 336, pl. 29, fig. 10.
  - Carboniferons: Pittston, Pennsylvania.
- 1890. Disconsura rigida. Scudder, Foss. Insc. N. A., vol. 1, p. 300, pl. 15, fig. 10. Carboniferous: Pittston, Pennsylvania.

### DIELASMA King, 1850.

### Dielasma bovidens Morton.

- 1836. Terebratule bovidene. Morton, Am. Jour. Sci. (1), vol. 29, p. 150, pl. 2, fig. 4. Coal Measures: Ohio Valley.
- 1856. Terebratula millepunctata. Hall, Pac. R. R. Rep., vol. 3, p. 101, pl. 2, figs. 1, 2. Carboniferous: Pecos Village, New Mexico.
- 1856. Terebratula millepunctata. Hall, Trans. Albany Inst., vol. 4, p. 35. Upper Carboniferous: Topeka, Kansas.
- 1859. Terebratula millepunctuta. Meek and Hayden, Prec. Acad. Nat. Sci. Phil., p. 26.
- Upper Coal Measures: Leavenworth, and near Indianola, Kansas. 1859. Terebratula elongata. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 392.
- Permian: Guadalupe Mountains.

  \*1861. Terebratula geniculosa. McChesney, Desc. New Pal. Foss., p. 82.
- 1869. Terebratula bovidens. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 37, pl. 1, figs. 2a-c.
  Coal Measures: Lasalle, Illinois.
- 1872. Terebratula bovidene. Meek, U. S. Geol. Surv. Nebr., p. 187, pl. 1, figs. 7a-d, pl. 2, fig. 4.
  - Upper Coal Measures: Plattemouth, Nebraska; Indian Creek, Kansas; Lasalle, Illinois; New Mexico.
  - Coal Measures: Ohio, Iowa, Missouri, Kansas, Illinois.
- 1873. Terebratula bovidens. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 572, pl. 25, fig. 15.
  Upper and Lower Coal Measures: Illinois.
- 1874. Dielasma? bovidens. White, Prelim. Rep. Inv. Foss., p. 21. Carboniferous (Coal Measures): (Far West).
- 1877. Terebratula (Dielasma) bovidens. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 144, pl. 11, figs. 10a-c.
  - Carboniferous: Near Santa Fe, New Mexico; a few miles south of St. George, Utah; top of Grass Mountain, Ely Range, 30 miles north of Pioche, Nevada.
- 1884. Terebratula hastata. Walcott, Pal. Eureka Dist., p. 224, pl. 7, figs. 7, 7b. Lower Carboniferous: Eureka District, Nevada.
- 1884. Terebratula bovidens. White, 13th Rep. Geol. Surv. Ind., p. 137, pl. 32, figs. 17-19.
  - Coal Measures: Perryeville, Eugene, Newport, Lodi, and Terre Haute (west of), Indiana; Posey, Warrick, Perry, and Crawford counties, Indiana.
- 1894. Dielasma bovidens. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 53, figs. 21-25.
  - Carboniferous L. S.: Harrison County, Missouri.
- 1894. Terebratula bovidens. Keyes, Mo. Geol. Surv., vol. 5, p. 105. Upper Coal Measures: Kansas City, Missouri.
- 1895. Dielasma bovidens. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 81, figs. 29-35.
  - Upper Carboniferous L. S.: Kansas City, Missouri; southern Indiana; Harrison County, Missouri.

# Dielasma bovidens Morton—Continued.

1897. Terebratula kastata. Smith, Proc. Am. Phil. Sec., vol. 35, p. 30. Lower Coal Measures: Conway County, Arkansas.

Upper Coal Measures: Poteau Mountain, Indian Territory.

# Dielasma burlingtonensis White.

\*1860. Terebratula burlingtonensis. White, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 228.

Burlington L. S.: Burlington, Iowa.

1874. Terebratula Burlingtonensis. White, Prelim. Rep. Inv. Foss., p. 17. Subcarboniferous: Mountain Spring, Old Mormon Road, Nevada.

1877. Terebratula (Dielasma) Burlingtononsis. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 93.

Subcarboniferous: Mountain Spring, Old Mormon Road, Nevada.

1895. Dielasma Burlingtonensis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 81, figs. 9-11.

Chert of Burlington L. S.: Louisiana, Missouri.

#### Dielasma formosa Hall.

1856. Terebratula formosa. Hall, Trans. Albany Inst., vol. 4, p. 6.
St. Louis L. S.: Spergen Hill and Bloomington, Indiana.

1882. Terebratula formosa. White, 11th Rep. Geol. Surv. Ind., p. 361, pl. 39, figs. 6-8.

St. Louis Group: Spergen Hill, Indiana.

1882. Terebratula formosa. Whitfield, Bull. Am. Mus. Nat. Hist., p. 55, pl. 6, figs. 59-64.

St. Louis Group: Spergen Hill, Paynter's Hill, Bloomington, and Elletteville, Indiana; Alton and Warsaw, Illinois.

1883. Terebratula formosa. Hall, 12th Rep. Geol. Surv. Ind., p. 337, pl. 29, figs. 59-64.

St. Louis Group: Alton, Illinois; Bloomington, Lanesville, and Spergen Hill, Indiana.

1894. Dielasma formosa. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 53, figs. 15-19.

St. Louis Group: Washington County, Indiana.

1895. Diclasma formosa. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 81, figs. 12-26.
St. Louis Group: Cherokee, Missouri; Spergen Hill, Indiana.

#### Dielasma gorbvi Miller.

1891. Terebratula gorbyi. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 77, pl. 13, figs. 3, 4.
Keokuk Group: Edwardsville, Indiana.

1892. Terebratula gerbyi. Miller, 17th Rep. Geol. Surv. Ind., p. 687, pl. 13, figs. 3, 4. Keokuk Group: Edwardsville, Indiana.

#### Dielasma obovata Hall and Clarke.

1895. Dielasma obovata. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 81, figs. 38-40. Coal Measures: Kentucky.

1897. Dielasma obovatum. Hall, 14th Rep. N. Y. State Geol., p. 372, pl. 14, figs. 12-14.

Coal Measures: Kentucky.

# Dielasma occidentalis Miller.

1892. Terebratula occidentalis. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 59, pl. 9, figs. 10-13. Chouteau L. S.: Sedalis, Missouri.

1894. Terebratula occidentalis. Miller, 18th Rep. Geol. Surv. Ind., p. 313, pl. 9, figs. 10-13.

Chouteau L. S.: Sedalia, Missouri.

## Dielasma rowleyi Worthen.

- 1884. Terebratula rowleyi. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 23.
  Base of Burlington L. S.: Pike County, Missouri.
- 1890. Terebratula rowleyi. Worthen, Geol. Surv. Ill., vol. 8, p. 102, pl. 11, figs. 6-6b. Burlington L. S.: Pike County, Missouri.
- 1894. Dielasma rowleyi. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 53, fig. 20.
  - Chouteau L. S.: Graydon Springs, Missouri.
- 1894. Terebratula rowleyi. Keyes, Mo. Geol. Surv., vol. 5, p. 105, pl. 41, fig. 23. Burlington L. S.: Louisiana, Missouri.
- 1895. Dielasma Rowleyi. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 81, figs. 27, 28. Chouteau L. S.: Graydon Springs, Missouri.

# Dielasma sacculus Martin.

1863. Terebratula sacculus. Davidson, Quart. Jour. Geol. Soc. Lond., vol. 19, p. 169, pl. 9, figs. 1-3.

Lower Carboniferous L. S.: Windsor, Brookfield, Shubenacadie, Gay's River, Debert River, Middle River, Cape Breton, Pugwash, East River of Pictou, Lennox Passage, etc., Nova Scotia.

1868. Terebratula sacculus. Dawson, Acad. Geol., p. 289, fig. 87.

Carboniferous L. S.: Windsor, Brookfield, Shubenacadie, Gay's River, Debert River, Middle River, Cape Breton, Pugwash, East River of Pictou, Lennox Passage, etc., Nova Scotia.

#### Dielasma shumardianum Miller.

1863. Terebratula arcuata. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 83. (Not T. arcuata. Roemer, 1840.)

Kaskaskia L. S.: Ste. Genevieve County, Missouri; Chester, Illinois.

1883. Terebratula shumardana. Miller, Am. Pal. Foss., 2d ed., p. 299.

## Dielasma turgida Hall.

- 1856. Terebratula turgida. Hall, Trans. Albany Inst., vol. 4, p. 6.
  - St. Louis L. S.: Alton, Illinois; Bloomington and Spergen Hill, Indiana.
- 1882. Terebratula turgida. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 54, pl. 6, figs. 53-58.
  - St. Louis Group: Spergen Hill, Bloomington, Paynter's Hill, and Ellettsville, Ind.; Pella, Iowa; Warsaw and Alton, Illinois; near Boonville, Missouri.
- 1883. Terebratula turgida. Hall, 12th Rep. Geol. Surv. Ind., p. 336, pl. 29, figs. 53-58.
  - St. Louis Group: Alton, Illinois; Bloomington, Lanesville, and Spergen Lill, Indiana.
- 1891. Torebratula turgida. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 586, pl. 13, figs. 21, 22.
  - Maxville L. S.: Maxville and Newtonville, Ohio.
- 1894. Dielaema turgida. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 53, figs. 10-12.
  - Chester L. S.: Spencer County, Indiana.
  - St. Louis Group: Washington County, Indiana.
- 1895. Dielasma turgida. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 81, figs. 1-8. St. Louis Group: Washington County, Indiana. Chester Group: Spencer County, Indiana.
- 1895. Terebratula turgida. Whitfield, Geol. Surv., Ohio, vol. 7, p. 473, pl. 9, figs. 21, 22.
  - Maxville L. S.: Maxville and Newtonville, Ohio.

## Dielasma turgida var. elongata Weller.

1897. Dielasma turgida var. elongata. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 260, pl. 18, fig. 6.

Batesville S. S.: Batesville, Arkansas.

# Dielasma (species undetermined).

1894. Dielasma sp.? Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 53, figs. 13, 14.

Chester L. S.: Caldwell County, Kentucky.

1895. Diclasma sp.? Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 81, figs. 36, 37. Chester Group: Caldwell County, Kentucky.

# DIPELTIS Packard, 1885.

# Dipeltis diplodiscus Packard.

1885. Dipettis diplodiscus. Packard, Am. Nat., vol. 19, p. 293.

Carboniferous: Mazon Creek, Illinois.

1886. Dipeltis diplodiscus. Packard, Mem. Nat. Acad. Sci., vol. 3, pt. 2, p. 145, pl. 5, figs. 2, 2a.

Carboniferous: Mazon Creek, Illinois.

### DIPHYPHYLLUM Lonsdale, 1845.

# Diphyphyllum (species undetermined).

1877. Diphyphyllum —— (f). Whiteaves, Geol. Surv. Canada, Rept. of Prog., 1875-76, p. 102.

Devonian or Carboniferous: Peace River, Canada.

# DIPLOPORA Young and Young, 1875.

# Diplopora bifurcata Ulrich.

1890. Diplopora bifurcata. Ulrich, Geol. Surv. Ill., vol. 8, p. 637, pl. 62, figs. 12, 12a. Chester Group: Chester, Illinois.

1894. Diplopora bifurcata. Keyes, Mo. Geol. Surv., vol. 5, p. 38. Kaskaskia L. S.: Chester, Illinois.

Diplopora biserialis Ulrich.

1890. Diplopora biscrialis. Ulrich, Geol. Surv. Ill., vol. 8, p. 637, pl. 62, figs. 11-11c. Lower Coal Measures: Seville, Illinois.

## DIPLOSTYLUS Salter, 1863.

## . Diplostylus dawsoni Salter.

1863. Diplostylus Dawsoni. Salter, Quart. Jour. Geol. Soc. Lond., vol. 19, p. 77, fig. 6.

Coal Measures: Joggins, Nova Scotia.

## (DISCINA Lamark, 1819.)

Discina capax. See Orbiculoidea capax.

Discina capuliformis. See Orbiculoidea capuliformis.

Discina connata. See Lingulodiscus connata.

Discina convexa. See Orbiculoidea convexa.

Discina gallaheri. See Orbiculoidea gallaheri.

Discina illinoisensis. See Orbiculoidea illinoisensis.

Discina keokuk. See Orbiculoidea keokuk.

Discina magnifica. See Orbiculoidea magnifica.

Discina manhattanensis. See Orbiculoidea manhattanensis.

Discina meekana. See Orbiculoidea missouriensis.

Discina missouriensis. See Orbiculoidea missouriensis.

Discina munda. See Orbiculoidea munda.

Discina newberryi. See Lingulodiscus newberryi.

Discina nitida. See Orbiculoidea nitida.

Discina patellaris. See Orbiculoidea patellaris.

Discina pleurites. See Lingulodiscus pleurites.

Discina saffordi. See Orbiculoidea saffordi.

Discina sampsoni. See Orbiculoidea sampsoni.

Discina subtrigonalis. See Orbiculoidea subtrigonalis.

Discina tenuilineata. See Orbiculoidea tenuilineata.

Discina trigonalis. See Orbiculoidea subtrigonalis.

Discina varsoviensis. See Orbiculoidea varsoviensis.

# DISCITES De Haan, 1825.

Discites hartti. See Stroboceras hartti.

Discites toddanus Gurley.

1883. Discites Toddanus. Gurley, New Carb. Foss. Bull. No. 1, p. 7. Upper Coal Measures: Kansas City, Missouri.

1890. Discites Toddanus. Anon., The Naturalist (Kansas City), vol. 4, No. 10, fig.

Coal Measures: Brush Creek, Kansas City, Missouri.

Discites tuberculatus. See Nautilus tuberculatus.

## DITHYROCARIS Scouler, 1844.

## Dithyrocaris carbonaria Meek and Worthen.

1870. Dithyrocaris carbonarius. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 55.

Coal Measures: Danville, Illinois.

1873. Dithyrocaris carbonarius. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 618, pl. 32, fig. 1.

Coal Measures: Danville, Illinois.

1884. Dithyrocaris carbonarius. White, 13th Rep. Geol. Surv. Ind., p. 178, pl. 39, fig. 3.

Coal Measures: Danville, Illinois.

# DIZYGOCRINUS Wachsmuth and Springer, 1897.

# Dizygocrinus andrewsianus McChesney.

1860. Actinocrinus andrewsianus. McChesney, Desc. New Pal. Foss., p. 27. Burlington L. S.: Burlington, Iowa.

1865. Actinocrinus andrewsianus. McChesney, Ill. New Spec. Foss., pl. 5, figs. 5a-b, pl. 10, fig. 2.

1868. Astinocrinus Andrewsianus. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 20, pl. 5, figs. 5a, b. Burlington L. S.: Burlington, Iowa.

1897. Disygocrinus andrewsianus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 433, pl. 29, figs. 2a-d.

Upper Burlington L. S.: Burlington, Iowa.

### Dizygocrinus biturbinatus Hall.

1858. Actinocrinus biturbinatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 616, pl. 16, figs. 5, 6a-c.

Keokuk L. S.: Nauvoo, Illinois.

1894. Batocrinus lyonanus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 18, pl. 3, figs. 4, 5.

St. Louis Group: Hardin County, Kentucky.

1894. Batocrinus biturbinatus. Keyes, Mo. Geol. Surv., vol. 4, p. 184. Keokuk L. S.: Boonville, Missouri.

1897. Dizugocrinus biturbinatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 427, pl. 33, fig. 9. Keokuk Group: Keokuk, Iowa.

## Dizygocrinus cantonensis Wachsmuth and Springer.

1897. Dizygocrinus cantonensis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 423, pl. 33, figs. 8a, b.

Keokuk Group: Canton and Edwardsville, Indiana.

# Dizygocrinus crawfordsvillensis Miller.

1891. Batocrinus crawfordsvillensis. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 64, pl. 10, figs. 11, 12.

Keokuk Group: Crawfordsville, Indiana.

1892. Batocrinus orawfordsvillensis. Miller, 17th Rep. Geol. Surv. Ind., p. 674, pl. 10, figs. 11, 12.

Keokuk Group: Crawfordsville, Indiana.

1897. Dizygocrinus crawfordsvillensis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 417.

Keokuk L. S.: Near Crawfordsville, Indiana.

### Dizveocrinus dodecadactvlus Meek and Worthen.

1861. Actinocrinus dodecadactulus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 131.

Burlington L.S.: Burlington, Iowa.

1866. Actinocrinus dodecadactylus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 205, pl. 15, figs. 3a-c.

Burlington L. S.: Burlington, Iowa.

1894. Batocrinus dodecadactylus. Keyes, Mo. Geol. Surv., vol. 4, p. 183. Upper Burlington L. S.: White Ledge, Marion County, Missouri.

1897. Dizygocrinus dodecadactylus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 432, pl. 29, figs. 1a-c.

Upper Burlington L. S.: Burlington, Iowa.

#### Dizygocrinus euconus Meek and Worthen.

1865. Batocrinus (Alloprosallocrinus) euconus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 164.

St. Louis Group: Six miles south of Anna, Illinois.

1884. Batocrinus subconicus. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist.,

Keokuk L.S.: Montgomery County, Indiana.

1890. Batocrinus subconicus. Worthen, Geol. Surv. Ill., vol. 8, p. 84, pl. 13, figs. 4, 4a.

Keokuk L. S.: Montgomery County, Indiana.

1894. Batocrinus enconus. Keyes, Mo. Geol. Snrv., vol. 4, p. 184.

Keokuk L. S.: Boonville, Missouri.

1897. Dizygocrinus euconus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 430, pl. 35, figs. 7a, b.

Warsaw L. S.: Spergen Hill, Indiana; Union County, Illinois; Taylor County, Kentucky.

## Dizygocrinus euconus var. abscissus Rowley and Hare.

1891. Batoorinus abscissus. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 115, pl. 3, fig. 6.

Keokuk L. S.: Indian Creek, 6 miles southwest of Curryville, Missouri.

1891. Batocrinus venustus. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 67, pl. 11, figs. 11, 12.

Keokuk Group: Boonville, Missouri.

1892. Batocrinus venustus. Miller, 17th Rep. Geol. Surv. Ind., p. 677, pl. 11, figs. 11, 12.

Keokuk Group: Boonville, Missouri.

1897. Dizygocrinus euconus var. abscissus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 431, pl. 46, fig. 9.

Keokuk Group and Warsaw L. S.: Taylor County, Kentucky; Boonville and Curryville, Missouri.

# Dizygocrinus facetus Miller and Gurley.

1890. Batocrinus facetus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 353, pl. 6, fig. 8.

Keokuk Group: Near Canton, Indiana.

1897. Dizygoorinus facetus. Wachemuth and Springer, N. Am. Crin. Cam., p. 418, pl. 33, fig. 12.

Keokuk Group: Canton, Indiana.

## Dizygocrinus gorbyi Miller.

1891. Batocrinus gorbyi. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 63, pl. 10, fig. 10.
Keokuk Group: Boonville, Missouri.

1892. Batocrinus gorbyi. Miller, 17th Rep. Geol. Surv. Ind., p. 673, pl. 10, fig. 10. Keokuk Group: Boonville, Missouri.

1897.(†) Dizygocrinus Gorbyi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 426.

Warsaw L. S.: Boonville, Missouri.

# Dizygocrinus gurleyi Miller.

1891. Batocrinus gurleyi. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 66, pl. 11, figs. 9, 10.

Keokuk Group: Boonville, Missouri.

1892. Batocrinus gurleyi. Miller, 17th Rep. Geol. Surv. Ind., p. 676, pl. 11, figs. 9, 10.

Keokuk Group: Boonville, Missouri.

1897. Dizygocrinus Gurleyi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 422, pl. 34, fig. 19.

Warsaw L. S.: Boonville, Missouri.

#### Dizygocrinus indianensis Lyon and Casseday.

1860. Actinocrinus Indianaensis. Lyon and Casseday, Am. Jour. Sci. (2), vol. 29, p. 75.

Subcarboniferons: Montgomery County, Indiana.

1897. Dizygocrinus indianensis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 415, pl. 33, figs, 6a, b; pl. 35, fig. 5. Keokuk Group: Crawfordsville, Indiana.

## Dizygocrinus indianensis var. simplex Wachsmuth and Springer.

1897. Dizygocrinus indiquensis var. simplex. Wachsmuth and Springer, N. Am. Crin. Cam., p. 416, pl. 33, fig. 7.

Keokuk Group: Crawfordsville, Indiana.

#### Dizygocrinus montgomeryensis Worthen.

1884. Batocrinus montgomeryensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 25.

Keokuk L. S.: Montgomery County, Indiana.

### Dizygocrinus montgomeryensis Worthen—Continued.

1890. Batocrinus montgomeryensis. Worthen, Geol. Surv. Ill., vol. 8, p. 83, pl. 12, figs. 2, 2a.

Keokuk L. S.: Montgomery County, Indiana.

1891. Batocrinus gurleyi. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 115, pl. 3, fig. 7.

Keokuk L. S.: Indian Creek, Pike County, Missouri.

1891. Batocrinus sweeti. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 116, pl. 3, fig. 8.

Keokuk L. S.: Indian Creek, 6 miles southwest of Curryville, Missouri.

1897. Dizygocrinus montgomeryensis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 428, pl. 33, figs. 3, 4; pl. 46, fig. 10.

Keokuk Group: Crawfordsville, Indiana; Keokuk, Iowa.; Pike County, Missouri.

### Dizygocrinus montgomeryensis var. unibrachiatus Wachsmuth and Springer.

1897. Dizygocrinus montgomeryensis var. unibrachiatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 429, pl. 33, figs. 5a-c. Keckuk L. S.: Keckuk, Iowa.

# Dizygocrinus mutabilis Wachsmuth and Springer.

1897. Dizygocrinus mutabilis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 429, pl. 35, figs. 8-11.
Keokuk Group: Indian Creek, Montgomery County, Indiana.

# Dizygocrinus originarius Wachsmuth and Springer.

1881. Eretmocrinus originarius. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil., p. 348. (Rev. Palæocr. II, p. 174.)

Keokuk L. S.: Near Bono, Lawrence County, Indiana.

1882. Eretmocrinus varsouviensis. Worthen, Bull. No. 1, Ill. State Mus. Nat Hist., p. 30.

Warsaw Beds: Warsaw, Illinois.

1883. Eretmocrinus Varsoviensis. Worthen, Geol. Surv. Ill., vol. 7, p. 306, pl. 28, fig. 14.

Warsaw Beds: Warsaw, Illinois.

- 1894. Eretmocrinus originarius. Keyes, Mo. Geol. Surv., vol. 4, p. 178. Keokuk L. S.: Boonville, Missouri.
- 1897. Dizygocrinus originarius. Wachsmuth and Springer, N. Am. Crin. Cam., p. 421, pl. 33, figs. 1a, b. Keokuk Group: Bono and Canton, Indiana.

Warsaw L. S.: Boonville, Missouri.

#### Dizygocrinus originarius var. adultus Wachsmuth and Springer.

- 1881. Eretmocrinus adultus. Wachsmuth and Springer, Proc. Acad. Nat. Sci.
  Phil., p. 349. (Rev. Palæocr. II, p. 175.)

  Keckek I. S.: Canton and Edwardsville, Indiana
  - Keokuk L. S.: Canton and Edwardsville, Indiana.
- 1891. Batocrinus mediocris. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 62, pl. 10, fig. 9.
  Keokuk Group: Boonville, Missouri.
- 1891. Batocrinus boonvillensis. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 65, pl. 10, fig. 13.
  Keokuk Group: Boonville, Missouri.
- 1892. Batoorinus mediooris. Miller, 17th Rep. Geol. Surv. Ind., p. 672, pl. 10, fig. 9. Keokuk Group: Boonville, Missouri.
- 1892. Batocrinus boonvillensis. Miller, 17th Rep. Geol. Surv. Ind., p. 675, pl. 10, fig. 13.

Keckuk Group: Boonville, Missouri.

# Disygocrinus originarius var. adultus Wachsmuth and Springer-Cont'd.

1897. Disygocrinus originarius var. adultus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 422, pl. 35, figs. 14, 15.

Keokuk Group: Bono, Lawrence County, Indiana.

Warsaw L. S.: Boonville, Missouri.

# Dizygocrinus rotundus Shumard.

- 1848. Actinocrinites. Christy, Letters on Geol., pl. 1, figs. 3, 4. Carboniferous Limestone: Oquawka, Illinois.
- 1855. Actinocrinus rotundus. Shumard, Geol. Rep. Mo., p. 191, pl. A. figs. 2a, b. Encrinital L. S.: Rocheport, Boone County; near Palmyra, Marion County, Missouri.
- 1860. Actinocrinus oblatus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 38. Burlington L. S.: Burlington, Iowa; Rocheford, Missouri.
- 1860. Actinocrinus rotundus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., pl. 3, fig. 1.
- 1893. Batocrinus oblatus. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 12, pl. 1, figs. 21, 22.

Burlington L. S.: Rocheford, Missouri.

- 1894. Batocrinus rotundus. Keyes, Mo. Geol. Surv., vol. 4, p. 182, pl. 23, figs. 6a, b. Upper Burlington L. S.: Ash Grove, Sedalia, Rocheport, Hannibal, Palmyra, and Lagrange, Missouri; Quiney, Illinois; Bonaparte and Burlington, Iowa.
- 1897. Disygocrinus rotundus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 431, pl. 29, figs. 3a-g, 4.
  - Upper Burlington L. S.: Burlington, Iowa; Henderson County, Illinois; Palmyra, Missouri.

#### Disygocrinus unionensis Worthen.

- 1890. Batocrinus unionensis. Worthen, Geol. Surv. Ill., vol. 8, p. 84, pl. 12, figs. 5, 5a; pl. 13, fig. 3.
  - St. Louis Group: Union County, Illinois.
- 1891. Batocrinus davisi. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 116, pl. 3, fig. 9.
- Kaskaskia Group: Near Flag Pond, Virginia.

  1891. Batocrinus pulchellus. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 68, pl. 11, figs. 13, 14.

Keokuk Group: Boonville, Missouri.

- 1892. Batocrinus pulchellus. Miller, 17th Rep. Geol. Surv. Ind., p. 678, pl. 11, figs. 13, 14.
  Keokuk Group: Boonville, Missouri.
- 1894. Batocrinus pulchellus. Keyes, Mo. Geol. Surv., vol. 4, p. 184. Keokuk L. S.: Boonville, Missouri.
- 1897. Dizygocrinus unionensis. Wachsmuth and Springer, N. Am. Orin. Cam., p. 424, pl. 35, figs. 16-20.
  - Warsaw L. S.: Near Huntsville, Alabama; Tateville, Pulaski County, Kentucky; Boonville, Missouri; Lee County, Virginia.

#### Disygocrinus unionensis var. divalis Miller.

- 1892. Batocrinus divalis. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 22, pl. 3, figs. 6, 7.
  - Keokuk Group: Boonville, Missouri.
- 1894. Batoorinus divalis. Miller, 18th Rep. Geol. Surv. Ind., p. 276, pl. 3, figs. 6, 7. Keokuk Group: Boonville, Missouri.
- 1897. Dizygocrinus unionensis var. divalis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 425, pl. 35, figs. 21-24.
  - Warsaw L. S.: Boonville, Missouri; Huntsville, Alabama.

# Dizygocrinus whitei Wachsmuth and Springer.

1881. Batocrinus Whitei. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil., p. 343. (Rev. Palæcr. II, p. 169.)

Keokuk Group: Bono, Canton, and Edwardsville, Indiana.

1897. Dizygocrinus Whitei. Wachsmuth and Springer, N. Am. Crin. Cam., p. 419, pl. 33, figs. 10a, b, 11.

Keokuk Group: Bono, Indiana; Keokuk, Iowa,

Warsaw L. S.: Spergen Hill, Indiana; Glasgow, Barren County, Kentucky; Boonville, Missouri.

## Dizygocrinus whitei var. didactylus Wachsmuth and Springer.

1897. Dizygocrinus Whitei var. didactylus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 420, pl. 35, figs. 12, 13.

Keokuk Group: Hamilton, Illinois.

# (DOLABRA McCoy, 1844.)

Dolabra alpina. See Schizodus alpina.

# (DOLICHOPTERUS Hall, 1859.)

# Dolichopterus mansfieldi Hall. See Eurypterus mansfieldi.

# DOMATOCERAS Hyatt, 1891.

## Domatoceras highlandensis Worthen.

1875. Nautilus (Discites) Highlandensis. Worthen, Geol. Surv. Ill., vol. 6, p. 531, pl. 33, fig. 2.

Coal Measures: Lasalle, Illinois; near Highland, Madison County, Illinois. 1893. Domatoceras? highlandense. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 440.

# Domatoceras lasallensis Meek and Worthen.

1865. Nautilus Lasallensis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 261.

Upper Coal Measures: Lasalle, Illinois.

1873. Nautilus Lasallensis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 610, pl. 31, fig. 1.

Upper Coal Measures: LaSalle, Illinois.

1888. Nautilus lasallensis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 242.

Lower Coal Measures: Des Moines, Iowa.

1893. Domatoceras (Nautilus) lasallonsis. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 441.

## Domatoceras militarium Hyatt.

1893. Domatoceras militarium. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 445, figs. 22-24.

Carboniferous: Military Crossing, Baylor County, Texas.

#### Domatoceras simplex Hyatt.

1893. Domatoceras simplex. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 441, figs.

Carboniferous: Ballinger and Military Crossing, Texas.

# Domatoceras umbilicatum Hyatt.

1891. Domatoceras umbilicatum. Hyatt, 2d Ann. Rep. Geol. Surv. Tex., p. 343, figs. 45-47.

Lower Coal Measures: Oswego, Kansas.

1893. Domatoceras umbilicatum. Hay, Trans. Kansas Acad. Sci., vol. 13, p. 42, fig. 12.

Lower Coal Measures: Oswego, Kansas.

# (DONAX Linneus, 1758.)

# (Donax rusticus Morton.)

1836. Donax rusticus. Morton, Am. Jour. Sci. (1), vol. 29, p. 151, pl. 3, fig. 15. Coal Measures: Ohio Valley.

# DORYCRINUS Roemer, 1854.

# Dorycrinus alabamensis Miller and Gurley.

1896. Dorycrinus alabamensis. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 15, pl. 3, figs. 15-17.

Keokuk Groupf: Chert Hill, Alabama.

Dorycrinus amænus. See Aorocrinus parvus.

Dorycrinus canaliculatus. See Aorocrinus canaliculatus.

Dorycrinus chouteauensis. See Actinocrinus chouteauensis.

Dorycrinus confragosus. See Eretmocrinus leucosia.

## Dorycrinus cornigerus Hall.

1858. Actinocrinus cornigerus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 576, pl. 9, figs. 12a-c. Burlington L. S.: Burlington, Iowa.

1860. Actinocrinus cornigerus. Hall, Supp., vol. 1, pt. 2, Geol. Rep. Ia., pl. 3, fig. 4.

1860. Actinocrinus divaricatus. Hall, Supp., vol. 1, pt. 2, Geol. Rep. Ia., p. 11. Burlington, L. S.: Burlington, Iowa.

1860. Actinocrinus decornis. Hall, Supp., vol. 1, pt. 2, Geol. Rep. Ia., p. 13. Burlington L. S.: Burlington, Iowa.

1894. Dorycrinus cornigerus. Keyes, Mo. Geol. Surv., vol. 4, p. 172.

Upper Burlington L. S.: Ash Grove, Missouri.

1897. Dorycrinus cornigerus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 458, pl. 42, figs. 5, 6; pl. 43, fig. 5; pl. 44, figs. 6, 7.
Burlington L. S.: Burlington, Iowa.

Dorycrinus elegans. See Acrocrinus elegans.

# Dorycrinus faberi Miller and Gurley.

1896. Dorycrinus faberi. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 19, pl. 1, figs. 8-10.
Burlington Group: Burlington, Iowa.

### Dorycrinus gouldi Hall.

1858. Actinocrinus gouldi. Hall, Geol. Iowa, vol. 1, pt. 2, p. 613, pl. 15, figs. 6a, b. Keokuk L. S.: Near Warsaw, Illinois.

1894. Dorycrinus gouldi. Keyes, Mo. Geol. Surv., vol 4, p. 173, pl. 23, fig. 1. Keokuk L. S.: Curryville, Kahoka, Boonville, and Lagrange, Missouri; Keokuk, Iowa.

1897. Dorycrinus Gouldi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 456, pl. 43, figs. 2, 3; pl. 44, figs. 4, 5.

Keokuk Group: Keokuk, Iowa; Barren County, Kentucky; Indian Creek, Montgomery County, Indiana.

# Derycrinus greenei Miller and Gurley.

1894. Dorycrinus greenei. Miller and Gurley, Bull. No. 5, Ill. State Mus. Nat. Hist., p. 48, pl. 5, figs. 1-3.

Knobstone Group: Button Mould Knobs, Bullitt County, Kentucky.

Dorycrinus immaturus. See Aorocrinus immaturus.

Dorycrinus inflatus. See Dorycrinus unicornis.

## Dorycrinus intermedius Meek and Worthen.

1868. Doryorinus quinquelobus var. intermedius. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 346.

Upper Burlington Group: Burlington, Iowa.

1873. Dorycrinus quinquelobus var. intermedius. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 385, pl. 10, fig. 4.
Burlington L. S.: Burlington. Iowa.

1894. Dorycrinus intermedius. Keyes, Mo. Geol. Surv., vol. 4, p. 173. Upper Burlington L. S.: Quincy, Illinois; near Burlington, Iowa.

1897. Dorycrinus intermedius. Wachsmuth and Springer, N. Am. Crin. Cam. p. 461, pl. 44, fig. 1.

Burlington and Keokuk transition bed.

Dorycrinus kelloggi. See Aorocrinus spinosulus.

Dorycrinus lineatus: See Dorycrinus unicornis.

## Dorycrinus mississippiensis Roemer.

1859. Doryorinus mississippiensis. Roemer, Archiv. für Naturgeschichte, Jahrg. 19, Bd. 1, pp. 207–220, pl. 10. Kohlenkalk: Warsaw, Illinois.

1860. Actinocrinus (Dorycrinus) mississippioneis var. spiniger. Hall, Supp. vol. 1, pt. 2. Geol. Rep. Ia., p. 53.
Keokuk L. S.: Warsaw, Illinois.

1890. Dorycrinus mississippionsis. Worthen, Geol. Surv. Ill., vol. 8, p. 100, pl. 12, fig. 4.

Keokuk L. S.: Hamilton, Illinois.

1894. Dorycrinus mississippiensis. Keyes, Mo. Geol. Surv., vol. 4, p. 174. Keokuk L. S.: Kahoka, Missouri; Keokuk, Iowa; Warsaw, Illinois.

1897. Dorycrinus mississippiensis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 455, pl. 43, fig. 1; pl. 44, figs. 2, 3.

Keekuk Group, Keekuk Lowe, Worsey Hemilton and Nauvec Illinoise.

Keokuk Group: Keokuk, Iowa; Warsaw, Hamilton, and Nauvoo, Illinois; White's Creek, Tennessee; Indiana and Kentucky.

# Dorycrinus missouriensis Shumard.

1855. Actinocrinus Missouriensis. Geol. Rep. Mo., p. 190, pl. A, figs. 4a-c. Encrinital L. S.: North River, near Palmyra, Marion County, Missouri.

1861. Actinocrinus desideratus. Hall, Desc. New Spec. Crin., p. 2. Burlington L. S.

1861. Actinocrinus desideratus. Hall, Jour: Bost. Soc. Nat. Hist., vol. 7, p. 373. Burlington L. S.: Burlington, Iowa.

1894. Dorycrinus missouriensis. Keyes, Mo. Geol. Surv., vol. 4, p. 171.
Upper Burlington L. S.: Ash Grove, Palmyra, Sedalia, Hannibal, and Louisiana, Missouri.

1897. Dorycrinus missouriensis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 463, pl. 43. fig. 6; pl. 45, figs. 13a-c, 14.
Upper Burlington L. S.: Palmyra, Missouri; Burlington, Iowa.

#### Dorycrinus parvibasis. See Aerocrinus parvibasis.

Dorycrinus parvus. See Aorocrinus parvus.

Dorycrinus pendens. See Dorycrinus unicornis.

## Dorycrinus quinquelobus Hall.

1860. Actinocrinus quinquelobus. Hall, Supp. vol. 1. pt. 2, Geol. Rep. Ia., p. 15. Burlington L. S.: Burlington, Iowa.

1872. Actinocrinus quinquelobus. Hall, Photo. Plates of Crinoids, pl. 3, figs. 18-20.

1897. Dorycrinus quinquelobus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 460, pl. 42, figs. 7-9.

Upper Burlington L. S.: Burlington and Pleasant Grove, Iowa.

Dorycrinus quinquelobus var. intermedius. See Dorycrinus intermedius. Dorycrinus radiatus. See Aorocrinus radiatus.

# Dorycrinus remeri Meek and Worthen.

- 1868. Doryorinus Roemeri. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 346. Upper Burlington Group: Burlington, Iowa.
- 1873. Dorycrinus Ræmeri. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 383, pl. 10, fig. 3.

Burlington L. S.: Burlington, Iowa.

1897. Dorycrinus Ræmeri. Wachsmuth and Springer, N. Am. Crin. Cam., p. 464, pl. 45, figs. 15a, b.

Upper Burlington L. S.: Burlington and Pleasant Grove, Iewa.

# Dorycrinus sampsoni Miller and Gurley.

1896. Dorycrinus sampsoni. Miller and Gurley, Bull. No. 10, Ill. State Mus Nat. Hist., p. 17, pl. 3, figs. 20-22.

Burlington Group: Sedalia, Missouri.

Dorycrinus subaculeatus. See Aorocrinus subaculeatus.

## Dorycrinus suboviformis Miller and Gurley.

1897. Dorycrinus suboviformis. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 30, pl. 2, figs. 7-9.

Burlington Group: Near Sharon, Missouri.

# Dorycrinus subturbinatus Meek and Worthen.

1860. Actinocrinus (Amphoracrinus) subturbinatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 388.

Burlington L. S.: Burlington, Iowa.

1866. Amphoracrinus subturbinatus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 212, pl. 15, figs. 4a, b.

Burlington L.S.: Burlington, Iowa.

1897. Dorycrinus subturbinatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 466, pl. 42, figs. 10a, b.

Upper Burlington L. S.: Burlington, Iowa.

# Dorycrinus tricornis. See Dorycrinus unicornis.

#### Dorycrinus unicornis Owen and Shumard.

1850. Actinocrinus unicornis. Owen and Shumard, Jour. Acad. Nat. Sci. Phil., (2), vol. 2, p. 67, pl. 7, fig. 12.

Subcarboniferous L. S.: Burlington and Augusta Iowa.

1852. Actinocrinus unicornis. Owen and Shumard, Geol. Rep. Wis., Ia., and Minn., p. 593, tab. 5A, figs. 12a, b.

Subcarboniferous L. S.: Burlington and Augusta, Iowa.

1858. Actinocrinus unicornis. Hall, Geol. Ia., vol. 1, pt. 2, p. 568, pl. 10, figs. 5a-c. Burlington L. S.: Burlington, Iowa.

1858. Actinocrinus tricornis. Hall, Geol. Ia., vol. 1, pt. 2, p. 569. Burlington L. S.: Burlington, Iowa.

1860. Actinocrinus pendens. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 31. Burlington L. S.: Burlington, Iowa.

1860. Actinocrinus tricornis. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., pl. 2, fig. 7.

1873. Doryorinus unicornis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 383, pl. 6, fig. 2.

Burlington L. S.: Burlington, Iowa.

1881. Dorycrinus lineatus. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 4, p. 310, pl. 7, figs. 3, 3a.

Subcarboniferous: Lake Valley Mining District, New Mexico.

## Dorycrinus unicornis Owen and Shumard-Continued.

- 1893. Dorycrinus pendens. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 18, pl. 2, fig. 9.
  - Burlington L. S.: Burlington, Iowa.
- 1893. Doryorinus tricornis. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 19, pl. 2, fig. 6-8.
  - Burlington L. S.: Burlington, Iowa.
- 1891. Dorycrinus inflatus. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 114, pl. 3, fig. 4.
  - Lower Burlington L. S.: Louisiana, Missouri.
- 1894. Dorycrinus unicornis. Keyes, Mo. Geol. Surv., vol. 4, p. 169, pl. 23, fig. 2. Lower Burlington L. S.: Sedalia and Hannibal, Missouri.
- 1897. Dorycrinus unicornis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 468, pl. 45, figs. 8a-e, 9, 10.
  - Lower Burlington L. S.: Burlington, Iowa; Sedalia, Missouri; Lake Valley, New Mexico.

## Dorycrinus unispinus Hall.

- 1861. Actinocrinus unispinus. Hall, Desc. New Spec. Crin., p. 2.
  - Burlington L. S.
- 1861. Actinocrinus unispina. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 270. Burlington L. S.: Burlington, Iowa.
- 1858. Actinocrinus trinodus. Hall, Geol. Ia., vol. 1, pt. 2, p. 575. (An abnormal specimen.)
  - Burlington L. S.: Burlington, Iowa.
- 1872. Actinocrinus trinodus. Hall, Photo. Plates of Crinoids, pl. 3, fig. 7.
- 1897. Dorycrinus unispinus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 467, pl. 45, fig. 12.
  - Lower Burlington L. S.: Burlington, Iowa.

# ECHINODISCUS Worthen and Miller, 1883.

### Echinodiscus kaskaskiensis Hall.

- 1858. Agelacrinus kaskaskiensis. Hall, Geol. Ia., vol. 1, pt. 2, p. 696, pl. 25, fig. 18. Kaskaskia L. S.: Kaskaskia, Illinois.
- 1894. Echinodiscus kaskaskiensis. Keyes, Mo. Geol. Surv., vol. 4, p. 133, pl. 18, fig. 3. Kaskaskia L. S.: Ste. Mary's, Missouri; Kaskaskia, Illinois.

# Echinodiscus optatus Worthen and Miller.

- 1883. Echinodiscus optatus. Worthen and Miller, Geol. Surv. Ill., vol. 7, p. 336, pl. 31, fig. 9.
  - Chester L. S.: Monroe and Pope counties, Illinois.

#### Echinodiscus sampsoni Miller.

- 1891. Echinodiscus sampsoni. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 76, pl. 12, fig. 16.
  - Keokuk Group: Boonville, Missouri.
- 1892. Echinodiscus sampsoni. Miller, 17th Rep. Geol. Surv. Ind., p. 686, pl. 12, fig. 16.
  - Keokuk Group: Boonville, Missouri.
- 1894. Echinodiscus sampsoni. Keyes, Mo. Geol. Surv., vol. 4, p. 133. Keokuk L. S.: Boonville, Missouri.

# ECIENODICTYA Hall, 1884.

## Ectenodictya burlingtonensis Hall.

- 1884. Ectenodictya Burlingtonensis. Hall, 35th Rep. N. Y. State Mus. Nat. Hist., p. 476.
- Kinderhook Group (Yellow S. S.): Burlington, Iowa.

## Ectenodictya excentrica Hall.

1884. Ectenodictya eccentrica. Hall, 35th Rep. N. Y. State Mus. Nat. Hist., p. 476, pl. 20, fig. 1.

Keokuk Group: Crawfordsville, Indiana.

## Ectenodictya expansa Hall.

1884. Ectenodictya expansa. Hall, 35th Rep. N. Y. State Mus. Nat. Hist., p. 475, pl. 20, fig. 10.

Waverly S. S.: Warren, Pennsylvania.

### Ectenodictya implexa Hall.

1884. Ectenodictya implexa. Hall, 35th Rep. N.Y. State Mus. Nat. Hist., p. 475, pl. 19, fig. 1.

Waverly Group: Warren and Oil City, Pennsylvania.

# EDAPHOCERAS Hyatt, 1883.

# Edaphoceras niotensis Meek and Worthen.

1865. Nautilus (Temnocheilus) Niotensis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 260.

Keokuk Group: Niota and Warsaw, Illinois.

1873. Nautilus (Temnocheilus) Niotensis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 523, pl. 19, fig. 3.

Keokuk Group: Niota and Warsaw, Illinois.

1883. Edaphoceras niotensis. Hyatt, Proc. Bost. Soc. Nat. Hist., vol. 22, p. 288.

# EDMONDIA De Koninck, 1844.

# Edmondia æquimarginalis Winchell.

1862. Cardinia œquimarginalis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 413. Marshall Group: Marshall, Michigan.

1863. Edmondia aquimarginalis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 13. Yellow S. S.: Burlington, Iowa.

1865. Edmondia aquimarginalis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 127. Chemung Group: New York.

## Edmondia albersi Miller and Gurley.

1896. Edmondia albersi. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 8, pl. 1, figs. 9-11. Chouteau L. S.: Sedalia, Missouri.

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# Edmondia anomala Dawson.

1868. Edmondia anomala. Dawson, Acad. Geol., p. 303, fig. 105. Carboniferous L. S.: Windsor. Nova Scotia.

# Edmondia aspinwallensis Meek.

1871. Edmondia aspenwallensis. Meek, Prelim. Rep. U. S. Geol. Surv. Wyo, p. 299. Upper Coal Measures: Aspenwall. Nebraska.

1872. Edmondia Aspinwallensis. Meek, U.S. Geol. Surv. Nebr., p. 216, pl. 4, figs.

Upper Coal Measures: Aspinwall, Nebraska.

Lower Coal Measures: West Virginia.

Coal Measures: Illinois.

1876. Edmondia Aspenwallensis. White, Powell's Rep. Geol. Uinta Mts., p. 91.

Lower Aubrey Group: Confluence of Grand and Green rivers, Utah.

1884. Edmondia Aspinwallensis. White, 13th Rep. Geol. Surv. Ind., p. 148, pl. 31, figs. 4, 5.

Coal Measures: Indiana (†).

Bull. 153----16

## Edmondia aspinwallensis Meek-Continued.

1887. Edmondia (cf. aspinwallensis). Herrick, Bull. Den. Univ., vol. 2, p. 38, pl. 3, fig. 17; pl. 4, fig. 4.

Coal Measures: Flint Ridge, Ohio.

1894. Edmondia aspinwallensis. Keyes, Mo. Geol. Surv., vol. 5, p. 126, pl. 47, figs. 1a, b. Upper Coal Measures: Kansas City, Missouri.

# Edmondia bicarinata Winchell.

1863. Edmondia (?) bicarinata. Winchell, Proc. Acad. Nat. Sci. Phil., p. 13. Yellow S. S.: Burlington, Iowa.

1865. Edmondia? bicarinata. Winehell, Proc. Acad. Nat. Sci. Phil., p. 127.

# Edmondia binumbonata Winchell.

1862. Edmondia binumbonata. Winchell, Proc. Acad. Nat. Sci. Phil., p. 414. Marshall Group: Marshall, Michigan.

# Edmondia burlingtonensis White and Whitfield.

1862. Edmondia Burlingtonensis. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 301.

Chemung Group: Burlington, Iowa.

1865. Edmondia Burlingtonensis? Winchell, Proc. Acad. Nat. Sci. Phil., p. 127.

Marshall Group: One mile east of Orange Center, Cuyahoga County, Ohio. 1885. Edmondia Burlingtonensis. Hall, Pal. N. Y., vol. 5, pt. 1, p. 390, pl. 64, fig. 22;

pl. 95, figs. 13, 14.

Yellow S. S.: Burlington, Iowa.

1888. Edmondia burlingtonensis. Herrick, Bull. Den. Univ., vol. 3, p. 77, pl. 4, fig. 18; pl. 9, figs. 17, 27.

Waverly Group: Licking County, Ohio.

1894. Edmondia burlingtonensis. Keyes, Mo. Geol. Surv., vol. 5, p. 126, pl. 47, fig. 3. Lower Burlington, L. S.: Louisiana, Missouri.

# Edmondia calhouni. See Pleurophorus calhouni.

## Edmondia circularis Walcott.

1884. Edmondia ? circularis. Walcott, Pal. Eureka Dist., p. 246, pl. 22, fig. 9. Lower Carboniferous: Eureka District, Nevada.

#### Edmondia concentrica. See Astartella concentrica.

## Edmondia depressa Hall.

\*1870. Edmondia depressa. Hall, Prelim. Not. Lamell. 2, p. 91.

Waverly S. S.: Licking County, Ohio.

1885. Edmondia depressa. Hall, Pal. N. Y., vol. 5, pt. 1, p. 391, pl. 64, fig. 32. Waverly S. S.: Licking County, Ohio.

1888. Edmondia depressa. Herrick, Bull. Den. Univ., vol. 3, p. 76, pl. 8, fig. 5.

888. Edmondia depressa. Herrick, Bull. Den. Univ., vol. 3, p. 76, pl. 8, fig. 5. Waverly Group: Licking County, Ohio.

## Edmondia ellipsis Hall.

1885. Edmondia ellipsis. Hall, Pal. N. Y., vol. 5, pt. 1, p. 392, pl. 64, fig. 25. Burlington S. S.: Burlington, Iowa.

#### Edmondia elliptica Winchell.

1863. Edmondia (?) elliptica. Winchell, Proc. Acad. Nat. Sci. Phil., p. 13. Yellow S. S.: Burlington, Iowa.

#### Edmondia gibbosa Swallow.

1858. Edmondia gibbosa. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 189. Lower Permian: Valley of Cottonwood, Kansas.

## Edmondia glabra Meek.

1872. Edmondia ? glabra. Meek, U. S. Geol. Surv. Nebr., p. 214, pl. 10, figs. 7a, b. Upper Coal Measures: Nebraska City, Nebraska.

## Edmondia glabra Meek-Continued.

1894. Edmondia glabra. Keyes, Mo. Geol. Surv., vol. 5, p. 127. Upper Coal Measures: Kansas City, Missouri.

#### Edmondia hartti Dawson.

1868. Edmondia Harttii. Dawson, Acad. Geol., p. 303, fig. 104.
Carboniferous L. S.: Windsor, Nova Scotia.

#### Edmondia hawni Swallow.

1858. Edmondia Hawni. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 209. Coal Measures: Near the Sac and Fox Agency, Kansas.

#### Edmondia illinoisensis Worthen.

1884. Edmondia illinoiensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 18. Upper Keokuk L. S.: Warsaw, Illinois.

1890. Edmondia illinoiensis. Worthen, Geol. Surv. Ill., vol. 8, p. 122, pl. 18, figs. 7, 7a.

Keokuk L. S.: Warsaw, Illinois.

#### Edmondia marionensis Swallow.

1860. Edmondia Marionensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 654. Chouteau L. S.: Cooper County, Missouri.

#### Edmondia medon Walcott.

1884. Edmondia Medon. Walcott, Pal. Eureka Dist., p. 245, pl. 23, fig. 6.
Lower Carboniferous: Eureka District, Nevada.

#### Edmondia mortonensis Geinitz.

1866. Astarte Mortonensis. Geinitz, Carb. und Dyas in Nebr., p. 17, tab. 1, fig. 26. Nebraska City, Nebraska.

#### Edmondia nebrascensis Geinitz.

1866. Astarte Nebrascensis. Geinitz, Carb. und Dyas in Nebr., p. 16, tab. 1, fig. 25. Nebraska City, Nebraska.

1872. Edmondia 7 Nebrascensis. Meek, U. S. Geol. Surv. Nebr., p. 214, pl. 10, figs. 8a, b.

Upper Coal Measures: Nebraska City, Nebraska.

1897. Edmondia nebrascensis. Smith, Proc. Am. Phil. Soc., vol. 35, p. 38. Upper Coal Measures: Poteau Mountain, Indian Territory.

#### Edmondia nitida Winchell.

1863. Edmondia nitida. Winchell, Proc. Acad. Nat. Sci. Phil., p. 12. Yellow S. S.: Burlington, Iowa.

# Edmondia nuptialis Winchell.

1863. Edmondia nuptialis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 12. Yellow S. S: Burlington, Iowa.

1894. Edmondia nuptialis. Keyes, Mo. Geol. Surv., vol. 5, p. 126, pl. 47, fig. 2. Lower Burlington L. S.: Louisiana, Missouri.

# Edmondia otoensis Swallow.

1858. Edmondia Otoensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 189. Lower Permian: Valley of Cottonwood, Kansas.

# Edmondia ovata Meek and Worthen.

1873. Edmondia orata. Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 26, fig. 13.
Coal Measures.

1874. Edmondia ovata. Meek, Am. Jour. Sci. (3), vol. 7, p. 580.

# Edmondia peroblonga Meek and Worthen.

1865. Edmondia peroblonga. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 249.

Upper Coal Measures: Lasalle, Illinois.

# Edmondia peroblonga Meek and Worthen-Continued.

1873. Edmondia? peroblonga. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 583, pl. 27, fig. 4.

Coal Measures: Lasalle, Illinois.

# Edmondia radiata. See Clinopistha radiata.

#### Edmondia reflexa Meek.

1872. Edmondia reflexa. Meek, U. S. Geol. Surv. Nebr., p. 213, pl. 10, figs. 6a, b; pl. 4, fig. 7.

Upper Coal Measures: Nebraska City, Nebraska.

1887. Edmondia (?) reflexa. Herrick, Bull. Den. Univ., vol. 2, p. 145, pl. 14, fig. 21. Coal Measures: Flint Ridge, Ohio.

# Edmondia semiorbiculata Swallow.

1858. Edmondia semiorbiculata. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 190.

Lower Permian: Near Council Grove, Kansas.

# Edmondia strigillata Winchell.

1863. Edmondia strigillata. Winchell, Proc. Acad. Nat. Sci. Phil., p. 12. Yellow S. S.: Burlington, Iowa.

# Edmondia suborbiculata Shumard.

1859. Edmondia suborbiculata. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 398. White Permian L. S.: Guadalupe Mountains.

## Edmondia subplana Hall.

1856. Cypricardia subplana. Hall, Trans. Albany Inst., vol. 4, p. 19. St. Louis L. S.: Spergen Hill, Indiana.

1882. Edmondia subplana. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 66, pl. 7, fig. 38.

St. Louis Group: Spergen Hill and Bloomington, Indiana.

1883. Edmondia († †) subplana. Hall, 12th Rep. Geol. Surv. Ind., p. 342, pl. 30, fig. 38.

St. Louis Group: Spergen Hill and Lanesville, Indiana.

#### Edmondia subtruncata Meek.

1872. Edmondia subtruncata. Meek, U. S. Geol. Surv. Nebr., p. 215, pl. 2, fig. 7. Upper Coal Measures: Rock Bluff, Nebraska; Atchison, Kansas. Lower Coal Measures: Illinois.

1894. Edmondia subtruncata. Keyes, Mo. Geol. Surv., vol. 5, p. 127. Upper Coal Measures: Kansas City, Missouri.

## Edmondia sulcifera Herrick.

1888. Edmendie sulcifera. Herrick, Bull. Den. Univ., vol. 4, p. 30, pl. 5, figs. 1. 2. Waverly Group: Moot's Run, Licking County, Ohio.

1889. Edmondia sulcifera. Herrick, Am. Geol., vol. 3, pl. 3, figs. 1. 2.

1886. Edmondia sulcifera. Herrick. Geol. Surv. Ohio, vol. 7. pl. 22, figs. 18. 20, 24. Cuvahoga Shale: Cuvahoga and Licking counties. Ohio.

## Edmondia taposiformis Meek.

1875. Edmondia ! tapesi/ormis. Meek. Pal. Ohio, vol. 2, p. 304, pl. 13, fig. 6. Waverly Group: Richfield. Ohio.

#### Edmondia unioniformis Phillips.

1896. Inverdie unioniformis. Phillips. Geol. Yorkshire, vol. 2, p. 209, pl. 5, fig. 18.

1886. Edmondia unioniformis! Meek and Worthen, Gool. Surv. III., vol. 2, p. 346. pl. 27, figs. 6, 69.

Upper Coal Measures: North branch of Saline Creek, Gallatin County, Illinois.

1897. Edmondia unioni/ormis. Smith, Proc. Am. Phil. Soc., vol. 25, p. 28.
Lower Coal Measures: Conway County, Arkaness.

#### Edmondia varsoviensis Worthen.

- 1884. Edmondia varsoviensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 18. Upper Keokuk L. S.: Warsaw, Illinois.
- 1890. Edmondia varsoviensis. Worthen, Geol. Surv. Ill., vol. 8, p. 121, pl. 20, figs. 11, 11a.

Keokuk L. S.: Warsaw, Illinois.

# Edmondia (species undetermined).

- 1876. Edmondia 7 —. White, Powell's Rep. Geol. Uinta Mts., p. 92.
  Upper Aubrey Group: Confluence of Grand and Green rivers, Utah.
- 1888. Edmondia? Herrick, Bull. Den. Univ., vol. 3, pl. 4, fig. 5. Waverly Group: Licking County, Ohio.
- 1888. Edmondia sp. Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 3. Waverly Group: Cuyahoga Falls, Ohio.

# EILETICUS Scudder, 1882.

# Eileticus æqualis Scudder.

- 1890. Elleticus æqualis. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 421, pl. 38, figs. 6-9.
  - Carboniferous: Mazon Creek, Illinois.
- 1890. Eileticus aqualis. Scudder, Foss. Insc. N. A., vol. 1, p. 397, pl. 30, figs. 6-9. Carboniferous: Mazon Creek, Illinois.

## Eileticus anthracinus Scudder.

- 1882. Eileticus anthracinus. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 179, pl. 13, figs. 5, 6.
  - Carboniferous: Mazon Creek, Illinois.
- 1890. Eileticus anthracinus. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 420, pl. 38, fig. 5.

Carboniferous: Mazon Creek, Illinois.

1890. Eileticus anthracinus. Scudder, Foss. Insc. N. A., vol. 1, pp. 231, 396, pl. 10, figs. 5, 6; pl. 30, fig. 5.

Carboniferous: Mazon Creek, Illinois.

## (ELÆACRINUS Roemer, 1852.)

## Elæacrinus kirkwoodensis. See Cryptoblastus kirkwoodensis.

## ELYMELLA Hall, 1885.

# Elymella missouriensis Miller and Gurley.

1896. Elymella missouriensis. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 15, pl. 2, figs. 11, 12.

Chouteau L. S.: Near Sedalia, Missouri.

#### Elymella patula Hall.

1885. Elymella patula. Hall, Pal. N. Y., vol. 5, pt. 1, p. 505, pl. 40, fig. 11. Waverly Group: Medina, Ohio.

# ENDOLOBUS Meek and Worthen, 1865.

## Endolobus avonensis Dawson.

- 1868. Nautilus Avonensis. Dawson, Acad. Geol., p. 311, figs. 124a, b. Carboniferous L. S.: Windsor and Minudie, Nova Scotia.
- 1895. Endolobus aronensis. Hyatt, Proc. Am. Phil. Soc., vol. 32, p. 536, pl. 8, figs. 36-39.

Joggins, Nova Scotia.

## Endolobus gibbosus Hyatt. See Stearoceras gibbosum.

#### Endolobus missouriensis Swallow.

- 1858. Nautilus Missouriensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 198. Near Base of Coal Measures: Boone County, Missouri.
- 1884. Nautilus Missouriensis. White, 13th Rep. Geol. Surv. Ind., p. 166, pl. 35, figs. 1, 2.

Coal Measures: Silverwood, Fountain County, Indiana.

- 1893. Nautilus missouriensis. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 453.
- 1894. Nautilus missouriensis. Keyes, Mo. Geol. Surv., vol. 5, p. 224, pl. 56, fig. 3. Lower Coal Measures: Boone County, Missouri.
- 1897. Endolobus (Nautilus) missouriensis. Smith, Proc. Am. Phil. Soc., vol. 35, p. 42, pl. 21, figs. 1-3.

Lower Coal Measures: Conway County, Arkansas.

#### Endolobus spectabilis Meek and Worthen.

- 1860. Nautilus spectabilis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 469. Chester L. S.: Gravel Creek, Raudolph County, Illinois.
- 1865. Nautilus (Endolobus) peramplus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 259.
  - Chester Group: Randolph County, Illinois.
- 1866. Nautilus (Endolobus) spectabilis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 308, pl. 25, figs. 1a, b.
  - Chester Group: Randolph County, Illinois.
- 1891. Nautilus (Temnocheilus) spectabilis. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 594, pl. 14, fig. 22.

Maxville L. S.: Near Rushville, Ohio.

- 1894. Nautilus spectabilis. Keyes, Mo. Geol. Surv., vol. 5, p. 222. Kaskaskia L. S.: St. Louis County, Missouri.
- 1895. Nautilus (Temnocheilus) spectabilis. Whitfield, Geol. Surv. Ohio, vol. 7, p. 480, pl. 10, fig. 22.

Maxville L. S.: Near Rushville, Ohio.

#### ENDOTHYRA Phillips, 1845.

#### Endothyra baileyi Hall.

- 1856. Rotalia Baileyi. Hall, Trans. Albany Inst., vol. 4, p. 34. St. Louis L. S.
- 1876. Endothyra Bowmani. Brady, Monog. Carb. and Perm. Form., p. 92, pl. 5, figs. 1-4.
  Subcarboniferous: Indiana.
- 1882. Endothyra Baleyi. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 42, pl. 9, figs. 34-36.
  - St. Louis Group: Spergen Hill and Bloomington, Indiana; Alton, Illinois.
- 1883. Endothyra baleyi. Hall, 12th Rep. Geol. Surv. Ind., p. 321, pl. 32, figs. 34-36. St. Louis Group: Alton, Illinois; Spergen Hill, Bloomington, and Lanesville, Indiana.

## Endothyra ornata Brady.

- 1876. Endothyra ornata. Brady, Monog. Carb. and Perm. Form., p. 99, pl. 6, figs. 1-4.
  - Lower and Upper Carboniferous: England, Scotland, and Ireland.
- 1880. Endothyra ornata. White, Proc. U. S. Nat. Mus., vol. 2, p. 291.

  Carboniferous: Teton Mountains, south of Yellowstone National Park.

## ENTELETES Fischer, 1830.

## Enteletes hemiplicata Hall.

- 1852. Spirifer hemiplicata. Hall, Stansb. Exped. to Gt. Salt Lake, p. 409, pl. 4, figs. 3a, b.
  - Carboniferous: Missouri River, near Weston.
- 1859. Spirifer hemiplicata. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 28. Upper Coal Measures: Near Leavenworth, Kansas.
- 1866. Rhynchonella angulata. Geinitz, Carb. und Dyas. in Nebr., p. 37, tab. 3, figs. 1-4.
  - Bennett's Mill and Nebraska City, Nebraska.
- 1866. Syntrelasma hemiplicata. Meek and Worthen, Geol. Surv. Ill., vol. 2, pp. 323, 324, fig. 37.
  - Upper Coal Measures: 12 miles north of Vandalia, Illinois; Eastern Kansas, Northern Missouri, Western Iowa.
- 1872. Syntrelasma hemiplicata. Meek, U. S. Geol. Surv. Nebr., p. 177, pl. 6, figs. 1a, b; pl. 8, figs. 12a, b.
  - Upper Coal Measures: Nebraska City, Wyoming, and Bennett's Mill, Nebraska.
  - Coal Measures: Illinois, Iowa, Missouri, Kansas.
- 1873. Syntriclasma hemiplicata. Meek and Worthen, Geol. Surv. Ill., vol. 5, p, 571, pl. 26, fig. 20.
  - Upper Coal Measures: 12 miles north of Vandalia, Illinois.
- 1882. Camerophoria giffordi. Worthen, Bull. No. 1., Ill. State Mus. Nat. Hist., p. 39.
  Middle Coal Measures: Near Alta, Peoria County, Illinois.
- 1883. Câmerophoria Giffordi. Worthen, Geol. Surv. Ill., vol. 7, p. 318, figs. a-c. Middle Coal Measures: Near Alta, Peoria County, Illinois.
- 1884. Syntrelasma hemiplicata. White, 13th Rep. Geol. Surv. Ind., p. 131, pl. 26. figs. 15-18.
  - Coal Measures: Indiana.
- 1892. Enteletes hemiplicata. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 12, figs. 18-21.
  - Coal Measures: Winterset, Iowa; Kansas City, Missouri.
- 1892. Enteletes hemiplicata. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 7A, figs. 44-52.
  - Upper Coal Measures: Kansas City, Missouri; Winterset, Iowa.
- 1894. Syntrilasma hemiplicata. Keyes, Mo. Geol. Surv., vol. 5, p. 76, pl. 39, figs. 8a-d.

Upper Coal Measures: Kansas City, Missouri.

## (ENTOLIUM Meek, 1865.)

Entolium attenuatum. See Pernopecten attenuatus.

Entolium aviculatum. See Pernopecten aviculatus.

Entolium circulus. See Pernopecten circulus.

Entolium cooperensis. See Pernopecten cooperensis.

Entolium shumardianum. See Pernopecten shumardianus.

#### EOCIDARIS Desor, 1858.

## Eccidaris blairi Miller.

- 1891. Eocidaris blairi. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 73, pl. 12, figs 1, 2.
  - Keokuk Group: Boonville, Missouri.
- 1892. Eocidaris blairi: Miller, 17th Rep. Geol. Surv. Ind., p. 683, pl. 12, figs. 1, 2. Kookuk Group: Boonville, Missouri.

## Eccidaris hallianus Geinitz.

- 1866. Eocidaris Hallianus. Geinitz, Carb. und Dyas in Nebr., p. 61, tab. 5, figs. 1a, b, 2a, b.
  - Nebraska City, Nebraska.
- 1872. Eocidaris Hallianus. Meek, U. S. Geol. Surv. Nebr., p. 152, pl. 7, figs. 9a-d. Upper Coal Measures: Nebraska City, Nebraska.
- 1894. Archæocidaris hallianus. Keyes, Mo. Geol. Surv., vol. 4, p. 129. Upper Coal Measures: Kansas City, Missouri.
- 1895. Archæocidaris hallianus. Keyes, Proc. Ia. Acad. Sci., vol. 2, p. 190. Upper Coal Measures: Kansas City, Missouri; Nebraska City, Nebraska.

Locidaris squamosus. See Lepidocidaris squamosus.

## EOSCORPIUS Meek and Worthen, 1868.

## **Escorpius carbonarius** Meek and Worthen.

- 1868. Scorpio carbonarius. Meek and Worthen, Am. Jour. Sci. (2), vol. 46, p. 24.
  Coal Measures: Mazon Creek, Grundy County, Illinois.
- 1868. Eoscorpius carbonarius. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 560, fig.

Coal Measures: Mazon Creek, Grundy County, Illinois.

## EOTROCHUS Whitfield, 1882.

## Eotrochus concavus Hall.

- 1856. Pleurotomaria concava. Hall, Trans. Albany Inst., vol. 4, p. 24.
  St. Louis L. S.: Spergen Hill and Bloomington, Indiana.
- 1882. Ectrochus concavus. Whitfield, Bull. Am. Mus. Nat. Hist., p. 78, pl. 9, figs. 21-23.
  - St. Louis Group: Spergen Hill, Indiana; Alton, Illinois.
- 1883. Eotrochus concavus. Hall, 12th Rep. Geol. Surv. Ind., p. 365, pl. 32, figs. 21-23.
  - St. Louis Group: Spergen Hill, Lanesville, and Bloomington, Indiana.

#### EPHIPPIOCERAS Hyatt, 1883.

#### Ephippioceras divisus White and St. John.

- 1868. Nautilus divisus. White and St. John, Trans. Chicago Acad. Sci., vol. 1, p. 124, fig. 9.
  - Upper Coal Measures: Fremont County, Iowa.
- 1891. Ephippioceras divisum. Hyatt, 2d Ann. Rep. Geol. Surv. Tex., p. 350, figs. 52-54.

Lower Coal Measures: Near Oswego, Kansas; Kansas City, Missouri; Texas.

## Ephippioceras ferratus Cox.

- 1857. Nautilus ferratus. Cox, Geol. Rep. Ky., vol. 3, p. 574, pl. 10, figs. 2, 2a.
  Coal Measures: Nolin Iron Works, Edmonson County, Kentucky.
- 1895. Ephippioceras ferratum. Hyatt, Phyl. Acq. Char., p. 539, pl. 10, figs. 23-26.
- 1897. Ephippioceras ferratum. Smith, Proc. Am. Phil. Soc., vol. 35, p. 43.

Lower Coal Measures: Conway County, Arkansas.

## ERETMOCRINUS Lyon and Casseday, 1859.

# Eretmocrinus adultus. See Dizygocrinus originarius var. adultus.

#### Eretmocrinus attenuatus Hall.

- \*1861. Actinocrinocrinus matuta var. attenuata. Hall, Desc. New Spec. Crin., p. 14. Burlington L. S.
- 1893. Eretmocrinus attenuatus. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 18, pl. 1, figs. 23, 24.
  - Burlington L. S.: Burlington, Iowa.

## Eretmocrinus calyculoides Hall.

- 1860. Actinocrinus calyculoides. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 17. Burlington L. S.: Burlington, Iowa.
- 1872. Actinocrinus calyculoides. Hall, Photo. Plates of Crinoids, pl. 3, figs. 2-5. 1894. Eretmocrinus calyculoides. Keyes, Mo. Geol. Surv., vol. 4, p. 177, pl. 23, fig. 13.

Upper Burlington L. S.: Ash Grove, Missouri.

1897. Eretmoorinus calyculoides. Wachsmuth and Springer, N. Am. Crin. Cam., p. 395, pl. 34, figs. 1a, b, 2-4.

Upper Burlington L. S.: Burlington, Iowa; Henderson County, Illinois; Sedalia, Missouri.

## Bretmocrinus calyculoides var. nodosus Wachsmuth and Springer.

1897. Eretmocrinus calyculoides var. nodosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 396, pl. 34, figs. 6-8.

Upper Burlington L. S.: Pleasant Grove, Iowa.

## Eretmocrinus carica. See Macrocrinus carica.

Eretmocrinus cassedayanus. See Eretmocrinus remibrachiatus var. expansus.

#### Eretmocrinus clio Hall.

- 1861. Actinocrinus clio. Hall, Desc. New Spec. Crin., p. 1. Burlington L. S.
- 1861. Actinocrinus clio. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 262. Burlington L. S.: Burlington, Iowa.
- 1872. Actinocrinus (Eretmocrinus) Clio. Hall, Photo. Plates of Crinoids, pl. 4. fig. 7.
- 1897. Eretmocrinus clio. Wachsmuth and Springer, N. Am. Crin. Cam., p. 393, pl. 36, figs. 2a, b, pl. 37, figs. 9a, b. Lower Burlington L. S.: Burlington, Iowa.

## Eretmocrinus clœlia Hall.

- 1861. Actinocrinus clælia. Hall, Desc. New Spec. Crin., p. 1. Burlington L. S.
- 1861. Actinocrinus clalia. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 266. Burlington L. S.: Burlington, Iowa.
- 1897. Eretmocrinus clalia. Wachsmuth and Springer, N. Am. Crin. Cam., p. 398. pl. 36, figs. 4a, b. Upper Burlington L. S.: Burlington, Iowa.

## Eretmocrinus commendabilis Miller and Gurley.

1895. Eretmoorinus commendabilis. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat Hist., p. 25, pl. 2, fig. 15. Keokuk Group: Crawfordsville, Indiana.

#### Eretmocrinus corbulis Hall.

- 1861. Actinocrinus corbulis. Hall, Desc. New Spec. Crin., p. 1. Burlington L. S.
- 1861. Actinocrinus corbulis. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 265. Burlington L. S.: Burlington, Iowa.
- 1894. Eretmocrinus corbulis. Keyes, Mo. Geol. Surv., vol. 4, p. 175, pl. 23, fig. 10. Lower Burlington L. S.: Louisiana, Missouri.
- 1897. Eretmocrinus corbulis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 399, pl. 36, figs. 5a-c, 6. Lower Burlington L. S.: Burlington, Iowa; Lake Valley, New Mexico.

#### **Eretmocrinus** coronatus Hall.

1860. Actinocrinus coronatus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 28. Burlington L. S.: Burlington, Iowa.

#### Eretmocrinus coronatus Hall—Continued.

- 1872. Actinocrinus coronatus. Hall, Photo. Plates of Crinoids, pl. 4, figs. 1, 2.
- 1873. Erstmoorinus coronatus. Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 10, figs. 8-8b.

Burlington Group.

- 1894. Eretmocrinus coronatus. Keyes, Mo. Geol. Surv., vol. 4, p. 176. Lower Burlington L. S.: Louisiana, Missouri.
- 1897. Eretmocrinus coronatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 403, pl. 37, figs. 7a-c.
  Lower Burlington L. S.: Burlington, Iowa.

#### Eretmocrinus depressus Keyes.

- 1894. Eretmoorinus depressus. Keyes, Mo. Geol. Surv., vol. 4, p. 176, pl. 23, fig. 11. Lower Burlington L. S.: Hannibal, Missouri.
- 1897. Eretmoorinus depressus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 392, pl. 36, figs. 11a, b.
  Upper Burlington L. S.: Burlington, Iowa.

## Eretmocrinus expansus Keves.

1894. Eretmoorinus expansus. Keyes, Mo. Geol. Surv., vol. 4, p. 175, pl. 23, fig. 12. Lower Burlington L. S.: Kinderhook, Illinois.

## Eretmocrinus granuliferus Wachsmuth and Springer.

1897. Eretmocrinus granuliferus. Wachsmuth and Springer, N. Am. Crin. Cam. p. 390, pl. 34, figs. 5a-c.

Keokuk Group: Indian Creek, Montgomery County, Indiana; Canton, Indiana.

## Bretmocrinus intermedius Wachsmuth and Springer.

Eretmocrinus konincki. See Macrocrinus konincki.

1881. Eretmocrinus intermedius. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil., p. 348. (Rev. Paleocr. II, p. 174.)

Keokuk L. S.: Near Bono, Lawrence County, Indiana.

1897. Eretmoorinus intermedius. Wachsmuth and Springer, N. Am. Crin. Cam., p. 404, pl. 33, figs. 2a-c.

Keokuk Group: Bono, Lawrence County, Indiana.

# Eretmocrinus lencosia Hall.

- 1861. Actinocrinus leucosia. Hall, Desc. New Spec. Crin., p. 1. Burlington L. S.
- 1861. Actinocrinus leucosia. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 261. Burlington L. S.: Burlington, Iowa.
- 1891. Dorycrinus confragosus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 34, pl. 5, figs. 12, 13.

Burlington Group: Sedalia, Missouri.

- 1892. Batocrinus blairi. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 39, pl. 6, figs. 7-10.
   Burlington Group: Sedalia, Missouri.
- 1894. Batorrinus blairi. Miller, 18th Rep. Geol. Surv. Ind., p. 293, pl. 6, figs. 7-10. Burlington Group: Sedalia, Missouri.
- 1894. Eretmocrinus leucosia. Keyes, Mo. Geol. Surv., vol. 4, p. 176. Burlington L. S.: Sedalia, Missouri.
- 1894. Batocrinus blairi. Keyes, Mo. Geol. Surv., vol. 4, p. 180. Lower Burlington L. S.: Sedalia, Missouri.
- 1897. Eretmoorinus leucosia. Wachsmuth and Springer, N. Am. Crin. Cam., p. 401, pl. 36, figs. 7a-c.
  Lower Burlington L. S.: Burlington, Iowa; Sedalia, Missouri.

Eretmocrinus lyonanus. See Eretmocrinus magnificus and Eretmocrinus remibrachiatus var. expansus.

## Eretmocrinus magnificus Lyon and Casseday.

1859. Erstmoorinus magnificus. Lyon and Casseday, Am. Jour. Sci. (2), vol. 28, p. 241.

Subcarboniferous (Knobstone): Quarries near Louisville and Nashville Railroad; Clear Creek, Hardin County, Kentucky; Indiana.

1891. Eretmocrinus lyonanus. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 59, pl. 10, fig. 3.

Keokuk Group: Little Beaver River, Kentucky.

1892. Eretmoorinus lyonanus. Miller, 17th Rep. Geol. Surv. Ind., p. 669, pl. 10, fig. 3.

Keokuk Group: Little Beaver River, Kentucky.

1897. Eretmoorinus magnificus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 386, pl. 37, fig. 3.

Keokuk Group: Clear Creek, Hardin County, Kentucky; New Ross, Montgomery County, Indiana; Pilot Knob, near Louisville, Kentucky; White's Creek Springs, near Nashville, Tennessee.

#### Eretmocrinus matutus Hall.

\*1861. Actinocrinus matuta. Hall, Desc. New Spec. Crin., p. 14. Burlington L. S.

1897. Eretmocrinus matuta. Wachsmuth and Springer, N. Am. Crin. Cam., p. 396, pl. 37, figs. 6a-c.
Upper Burlington L. S.: Burlington, Iowa.

## Eretmocrinus minor Wachsmuth and Springer.

1897. Eretmocrinus minor. Wachsmuth and Springer, N. Am. Crin. Cam., p. 391, pl. 36, figs. 10a, b.
Upper Burlington L. S.: Burlington, Iowa.

#### Eretmocrinus neglectus Meek and Worthen.

1868. Batocrinus (Eretmocrinus?) neglectus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 355.

Lower Burlington L. S.: Burlington, Iowa.

1873. Batocrinus (Eretmocrinus?) neglectus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 377, pl. 5, fig. 3.
Burlington L. S.: Burlington, Iowa.

1897. Eretmocrinus neglectus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 394, pl. 36, fig. 3.
Lower Burlington L. S.: Burlington, Iowa.

## Eretmocrinus originarius. See Dizygocrinus originarius.

## Eretmocrinus prægravis Miller.

1892. Eretmocrinus prægravis. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 37, pl. 6, figs. 5, 6.

Keokuk Group: Washington County, Indiana.

1894. Eretmocrinus prægravis. Miller, 18th Rep. Geol. Surv. Ind., p. 291, pl. 6, figs. 5, 6.

Keokuk Group: Washington County, Indiana.

1897. Eretmocrinus prægravis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 405, pl 34, figs, 9. 10.

Keokuk Group: White's Creek Springs, near Nashville, Tennessee; Pilot Knob, near Louisville, Kentucky; Barren County, Kentucky; New Ross, Montgomery County, Indiana.

## Eretmocrinus ramulosus Hall.

1858. Actinocrinus ramulosus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 615, pl. 15, fig. 7. Keokuk L. S.: Nauvoo, Illinois.

#### Eretmocrinus ramulosus Hall—Continued.

1897. Eretmocrinus ramulosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 387, pl. 37, figs. 4a, b, 5a-d.

Keokuk Group: Keokuk and Augusta, Iowa; Nauvoo, Illinois; White's Creek Springs, Tennessee.

## Eretmocrinus remibrachiatus Hall.

1861. Actinocrinus remibrachiatus. Hall, Desc. New Spec. Crin., p. 11. Burlington L. S.

1872. Actinocrinus (Eretmocrinus) remibrachiatus. Hall, Photo. Plates of Crinoids, pl. 4, figs. 8, 9.

1873. Batocrinus (Eretmocrinus) remibrachiatus. Meek and Worthen, Geol. Surv.
Ill., vol. 5, p. 370, pl. 10, fig. 5.
Burlington L. S.: Burlington, Iowa.

1894. Eretmocrinus remitrachiatus. Keyes, Mo. Geol. Surv., vol. 4, p. 178. Upper Burlington L. S.: Ash Grove, Missouri.

1897. Eretmocrinus remibrachiatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 388, pl. 37, figs. 2a, b. Upper Burlington L. S.: Burlington, Iowa.

## Eretmocrinus remibrachiatus var. expansus Wachsmuth and Springer.

1894. Eretmocrinus lyonanus. Miller and Gurley, Bull. No. 3, Ill. State Mús. Nat. Hist., p. 17, pl. 3, fig. 1. (Not E. lyonanus Miller, 1891.)
Upper Burlington Group: Near Burlington, Iowa.

1894. Ereimocrinus cassedayanus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist. (Corrigenda.)

1897. Eretmocrinus remibrachiatus var. expansus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 390, pl. 36, fig. 1; pl. 37, figs. 1a, b; pl. 44, fig. 9. Burlington and Keokuk Transition Bed: Near Burlington, Iowa; Henderson County, Illinois.

## Eretmocrinus rugosus Wachsmuth and Springer.

1897. Eretmocrinus rugosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 402, pl. 36, figs. 9a-c.

Lower Burlington L. S.: Burlington, Iowa.

Eretmocrinus varsoviensis. See Dizygocrinus originarius.

Eretmocrinus verneuilianus. See Macrocrinus verneuilianus.

## ERIDOPORA Ulrich, 1882.

#### Eridopora macrostoma Ulrich.

1882. Eridopora macrostoma. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 5, p. 137, pl. 6, figs. 2, 2a.

Kaskaskia Group: Point Burnside, Kentucky.

#### Eridopora punctifera Ulrich.

1882. Eridopora punctifera. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 5, p. 138, pl. 6, fig. 3.

Kaskaskia Group: Point Burnside, Kentucky.

## ERISOCRINUS Meek and Worthen, 1865.

## Erisocrinus antiquus Meek and Worthen.

1869. Erisocrinus antiquus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 71. Lower Burlington L. S.: Burlington, Iowa.

1873. Erisocrinus antiquus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 447, pl. 2. fig. 3.

Burlington L. S.: Burlington, Iowa.

#### Erisocrinus conideus Meek and Worthen.

1865. Erisocrinus conideus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 150. Coal Measures: Springfield, Illinois.

1866. Erisocrinus conideus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 318, fig. 35.

Coal Measures: Springfield, Illinois.

Erisocrinus inflexus. See Ceriocrinus inflexus.

Erisocrinus nebrascensis. See Erisocrinus typus.

Erisocrinus planus. See Ceriocrinus planus.

Erisocrinus tuberculatus. See Eupachycrinus tuberculatus.

## Erisocrinus typus Meek and Worthen.

1865. Erisocrinus typus. Meek and Worthen, Am. Jour. Sci. (2), vol. 39, p. 174.
Coal Measures: Near Springfield, Illinois.

1865. Erisoorinus Nebrascensis. Meek and Worthen, Am. Jour. Sci. (2), vol. 39, p. 174.

Coal Measures: Bellevue, Nebraska.

1865. Philocrinus pelvis. Meek and Worthen, Am. Jour. Sci. (2), vol. 39, p. 350.

1866. Erisoorinus typus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 317, f.gs. 33, 34.

Coal Measures: Near Springfield, Illinois.

1872. Erisocrinus typus. Meek, U. S. Geol. Surv. Nebr., p. 146, pl. 1, 11gs. 3a, b. Upper Coal Measures: Bellevue, Nebraska; Springfield, Illinois.

1873. Erisocrinus typus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 561, pl. 24, fig. 6.

Coal Measures: Springfield, Illinois.

1876. Erisocrinus typus. White, Powell's Rep. Geol. Uinta Mts., p. 89.
Lower Aubrey Group: Confluence of Grand and Green rivers.

1880. Erisocrinus typus. White, Cont. to Inv. Pal., No. 6, p. 126, pl. 33, fig. 5a. Upper Coal Measures: Bellevue, Nebraska.

## Erisocrinus whitei Meek and Worthen.

1869. Erisocrinus Whitei. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 72. Upper Burlington L. S.: Burlington, Iowa.

1873. Erisocrinus Whitei. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 448, pl. 2, fig. 2.

Burlington L. S.: Burlington, Iowa.

## ESCHARA Lamark, 1801.

## Eschara concentrica Prout.

1858. Eschara (?) concentrica. Prout, Trans. St. Louis Acad. Sci , vol. 1, p. 234. Carboniferous L. S.: Organ Mountains, New Mexico.

#### Eschara tuberculata Prout.

1858. Eschara (†) tuberculata. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 234. Carboniferous L. S.: Organ Mountains, New Mexico.

## ESTHERIA Ruppell, 1837.

## Estheria dawsoni Jones.

1868. Estheria. Dawson, Acad. Geol., p. 256, fig. 78d. Carboniferous: Horton Bluff, Nova Scotia.

1870. Estheria Dawsoni. Jones, Geol. Mag. (1), vol. 7, p. 220, pl. 9, fig. 15. Lower Carboniferous: Horton, Nova Scotia.

1878. Estheria Dawsoni. Jones, Geol. Mag. (2), vol. 5, p. 101, pl. 3, fig. 2. Lower Carboniferous: Scotland,

#### Estheria dawsoni Jones—Continued.

1884. Estheria Dawsoni. Jones and Kirkby, Gool. Mag. (3), vol. 1, p. 361, pl. 12, fig. 12.

Lower Carboniferous: Horton, Nova Scotia.

## ETOBLATTINA Scudder, 1882.

#### Etoblattina accubita Scudder.

1895. Etoblattina accubita. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 88, pl. 7, fig. 2.

Lower Permian: Cassville, West Virginia.

## Etoblattina angusta Scudder.

1895. Etoblattina angustata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 100, pl. 8, fig. 8.

Lower Permian: Cassville, West Virginia.

## Etoblattina aperta Scudder.

1895. Etoblattina aperta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 80, pl. 5, fig. 9.

Lower Permian: Cassville, West Virginia.

#### Etoblattina arcta Scudder.

1895. Etoblattina arcta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 97, pl. 8, fig. 5.

Lower Permian: Cassville, West Virginia.

#### Etoblattina balteata Scudder.

1879. Gerablattina balteata. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 110, pl. 6, figs. 9, 10.

Permo-Carboniferous: Cassville, Monongalia County, West Virginia; Bellaire, Ohio.

1880. Gerablattina balteata. Fontaine and White, 2d Geol. Surv. Penn., Rept. PP, p. 144, pl. 38, fig. 5.

Roof Shales of Waynesburg Coal: Cassville, West Virginia.

1890. Gerablattina balteata. Scudder, Foss. Insc. N. A., vol. 1, p. 130, pl. 6, figs. 9, 10. Permo-Carboniferous: Cassville, West Virginia; and Bellaire, Ohio.

1895. Etoblattina balteata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 73.

Lower Permian: Cassville, West Virginia.

Coal Measures: Bellaire, Ohio.

#### Rtoblattina benedicta Scudder.

1895. Etoblattina benedicta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 84, pl. 5, figs. 14, 15.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

#### Etoblattina clarkii Scudder.

1893. Etoblattina clarkii. Scudder, Bull. U. S. Geol. Surv. No. 101, p. 14, pl. 2, fig. j. Carboniferous: Pawtucket, Rhode Island.

1895. Etoblattina clarkii. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 72, pl. 5, fig. 10.

Lower (?) Coal Measures: Pawtucket, Rhode Island.

## Etoblattina clintoniana Scudder.

1895. Etoblattina clintoniana. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 66, pl. 4, fig. 1.

Lower Coal Measures: Gilkerston Ford, near Clinton, Missouri.

#### Etoblattina communis Scudder.

1895. Etoblattina communis. Scudder, Bull. U.S. Gool. Surv. No. 124, p. 93, pl. 7, figs. 10-17.

Lower Permian: Cassville, West Virginia.

#### Etoblattina debilis Scudder.

1895. Etoblattina debilis. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 71, pl. 4, fig. 8. Lower Permian: Cassville, West Virginia.

#### Etoblattina defossa Scudder.

1895. Etoblattina defossa. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 108, pl. 9, fig. 12.

Lower Permian: Cassville, West Virginia.

#### Etoblattina detecta Scudder.

1895. Etoblattina detecta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 75, pl. 4, figs. 12, 13.

Lower Permian: Cassville, West Virginia.

#### Etoblattina eakiniana Scudder.

1895. Etoblattina eakiniana. Scudder, Bull. U.S. Geol. Surv. No. 124, p. 88, pl. 7, fig. 1.

Lower Permian: Cassville, West Virginia.

## Etoblattina exigua Scudder.

1895. Etoblattina exigua. Soudder, Bull. U. S. Geol. Surv. No. 124, p. 76, pl. 5, fig. 4. Lower Permian: Cassville, West Virginia.

#### Etoblattina exilis Scudder.

1893. Etoblattina exilis. Scudder, Bull. U. S. Geol. Surv. No. 101, p. 17, pl. 2, fig. s. Carboniferous: Rhode Island.

1895. Etoblattina exilis. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 101, pl. 9, fig. 1.

Lower (†) Coal Measures: East Providence, Rhode Island.

#### Etoblattina expugnata Scudder.

1895. Etoblattina expugnata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 102, pl. 9, fig. 4.

Lower Permian: Cassville, West Virginia.

#### Etoblattina expulsata Scudder.

1895. Etoblattina expulsata. Soudder, Bull, U. S. Geol. Surv. No. 124, p. 89, pl. 7, figs. 3, 4.

Lower Permian: Cassville, West Virginia.

## Etoblattina expuncta Scudder.

1895. Etoblattina expuncta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 79, pl. 5, fig. 6.

Lower Permian: Cassville, West Virginia.

## Etoblattina exsecuta Scudder.

1895. Etoblattina exsecuta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 96, pl. 8, fig. 4.

Lower Permian: Cassville, West Virginia.

## Etoblattina exsensa Scudder.

1895. Etoblattina exsensa. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 86, pl. 6, figs. 7, 8.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

#### Etoblattina fasciata Scudder.

1888. Etoblattina fasciata. Scudder, Proc. Bost. Soc. Nat. Hist., vol. 24, p. 47. Barren Coal Measures: Richmond, Ohio; and Cassville, West Virginia.

1895. Etoblattina fasciata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 81, pl. 5, fig. 11.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

#### Etoblattina fossa Scudder.

1895. Etoblattina fossa. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 70, pl. 4, fig. 5.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

#### Etoblattina funeraria Scudder.

1895. Etoblattina funeraria. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 78, pl. 5, fig. 5.

Lower Permian: Cassville, West Virginia.

#### Etoblattina funesta Scudder.

1895. Etoblattina funesta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 85, pl. 6, fig. 4.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

## Etoblattina gorhami Scudder.

1893. Etoblattina gorhami. Scudder, Bull. U. S. Geol. Surv. No. 101, p. 16, pl. 2, fig. a.

Carboniferous: Pawtucket, Rhode Island.

1895. Etoblattina gorhami. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 80, pl. 5, fig. 8.

Lower (1) Coal Measures: Pawtucket, Rhode Island.

## Etoblattina gracilenta Scudder.

1895. Etoblattina gracilenta. Scudder, Bull. U.S. Geol. Surv. No. 124, p. 95, pl. 8, figs. 6, 7.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

#### Etoblattina gratiosa Scudder.

1895. Etoblattina gratiosa. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 90, pl. 7, fig. 5.

Lower Permian: Cassville, West Virginia.

## Etoblattina hastata Scudder.

1895. Etoblattina hastata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 94, pl. 8, fig. 1.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

#### Etoblattina hilliana Scudder.

1895. Etoblattina hilliana. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 99, pl. 8, . fig. 11.

Lower Coal Measures: Mazon Creek, Morris, Grundy County, Illinois.

#### Etoblattina hustoni Scudder.

1888. Etoblattina hustoni. Scudder, Proc. Bost. Soc. Nat. Hist., vol. 24, p. 53.
Barren Coal Measures: Wills Creek, Richmond, Ohio.

1895. Etoblattina hustoni. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 87, pl. 6, fig. 9.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

#### Etoblattina illustris Scudder.

1893. Etoblattina illustris. Scudder, Bull. U. S. Geol. Surv. No. 101, p. 12, pl. 2, fig. i.

Carboniferous: Rhode Island.

1895. Etoblattina illustris. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 70, pl. 4, fig. 11.

Lower (†) Coal Measures: Pawtucket (†), Rhode Island.

#### Etoblattina immolata Scudder.

1895. Etoblattina immolata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 92, pl. 7, figs. 7, 8.

Lower Permian: Cassville, West Virginia.

## Etoblattina imperfecta Scudder.

1895. Etoblattina imperfecta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 104, pl. 9, fig. 8.

Lower Permian: Cassville, West Virginia.

#### Etoblattina invisa Scudder.

1895. Etoblattina invisa. Scudder, Bull. U. S. Geol. Sur-. No. 124, p. 106, pl. 9, fig. 9.

Lower Permian: Cassville, West Virginia.

## Etoblattina jeffersoniana Scudder.

1895. Etoblattina jeffersoniana. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 71, pl. 5, fig. 7.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

## Etoblattina lata Scudder.

1895. Etoblattina lata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 67, pl. 4, fig. 2. Lower Permian: Cassville, West Virginia.

#### Etoblattina latebricola Scudder.

1895. Etoblattina latebricola. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 108, pl. 9, fig. 11.

Lower (?) Coal Measures: East Providence, Rhode Island.

## Etoblattina lesquereuxii Scudder.

1879. Etoblattina Lesquereuxii. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 67, pl. 6, figs. 3, 4.

Middle Carboniferous: Pittston, Pennsylvania.

1890. Etoblattina Lesquereuxii. Scudder, Foss. Insc. N. Am., vol. 1, p. 87, pl. 6, figs. 3, 4.

Middle Carboniferous: Pittston, Pennsylvania.

1895. Etoblattina lesquereuxii. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 83. Coal Measures: Yatesville, near Pittston, Pennsylvania.

#### Etoblattina macerata Scudder.

1895. Etoblattina macerata. Soudder, Bull. U. S. Geol. Surv. No. 124, p. 91, pl. 7, fig. 6.

Lower Permian: Cassville, West Virginia.

## Etoblattina macilenta Scudder.

1895. Etoblattina macilenta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 101, pl. 8, fig. 9.

Lower Permian: Cassville, West Virginia.

#### Etoblattina mactata Scudder.

1895. Etoblattina mactata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 92, pl. 7, fig. 9.

Lower Permian: Cassville, West Virginia.

#### Etoblattina maledicta Scudder.

1895. Etoblattina maledicta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 83, pl. 6, figs. 1-3.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

## Etoblattina marginata Scudder.

1888. Etoblattina marginata. Scudder, Proc. Bost. Soc. Nat. Hist., vol. 24, p. 48.
Barren Coal Measures: Richmond. Ohio.

1895. Etoblattina marginata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 95, pl. 8, fig. 2.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

#### Etoblattina mazona Scudder.

1882. Etoblattina mazona. Scudder, Proc. Bost. Soc. Nat. Hist., vol. 21, p. 391. Coal Measures: Mazon Creek, Illinois.

1882. Etoblattina mazona: Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 181, pl. 10.

Carboniferous: Mazon Creek, Illinois.

Bull. 153---17

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## Etoblattina masona Scudder-Continued.

1890. Etoblattina mazona. Scudder Foss. Insc. N. A., vol. 1, p. 233, pl. 7a. Carboniferous Mazon Creek, Illinois.

1895. Etoblattina mazona. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 89, pl. 6, fig. 5. Lower Coal Measures: Mazon Creek, Illinois.

#### Etoblattina mediana Scudder.

1895. Etoblattina mediana. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 69, pl. 4, fig. 4.

Lower Permian: Cassville, West Virginia.

## Etoblattina macronata Scudder.

1895. Ztoblattina macronata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 74, pl. 5, fig. 3.

Lower Permian: Cassville, West Virginia.

#### Etoblattina obatra Scudder.

1895. Etoblattina obatra. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 103, pl. 9, fig. 5.

Lower Permian: Cassville, West Virginia.

#### Rtoblattina occidentalis Scudder.

1890. Etoblattina occidentalis. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 410, pl. 32, fig. 4.

Carboniferous: Lawrence, Kansas.

1890. Etoblattina occidentalis. Scudder, Foss. Insc. N. A., vol. 1, p. 386, pl. 24, fig. 4. Carboniferous Lawrence, Kansas.

1895. Etoblattina occidentalis. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 76. Upper Coal Measures: Lawrence, Kansas.

#### Etoblattina occulta Scudder.

1895. Etoblattina occulta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 107, pl. 9, fig. 13.

Lower Permian: Cassville, West Virginia.

## Etoblattina ovata Scudder.

1895. Etoblattina orata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 70, pl. 4, fig. 6. Lower Permian Cassville, West Virginia.

#### **Etoblattina patiens** Scudder.

1895. Etoblattina patiens. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 73, pl. 4, fig. 9. Lower Permian Cassville, West Virginia.

## Etoblattina prædulcis Scudder.

1895. Etoblattina pradulcis. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 98, pl. 8, fig. 12.

Lower Permian: Cassville, West Virginia.

## Rtoblattina ramosa Scudder.

1895. Etoblattina ramosa. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 81, pl. 5, fig. 12.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

## Rtoblattina recidiva Scudder.

1895. Etoblattina recidira. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 109, pl. 9, fig. 14.

Lower Permian: Cassville, West Virginia.

#### Rtoblattina reliqua Scudder.

1893. Etoblattina reliqua. Scudder, Bull. U. S. Geol. Surv. No. 101, p. 18, pl. 2, fig. 9. Carboniferous. Pawtucket, Rhode Island.

1895. Etoblattina reliqua. Scudder. Bull. U. S. Geol. Surv. No. 124, p. 106, pl. 9, fig. 10.

Lower (†) Coal Measures: Pawtucket, Rhode Island.

#### Etoblattina residua Scudder

1895. Etoblattina residua. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 78, pl. 5, fig. 1. Lower Permian: Cassville, West Virginia.

## Etoblattina rogi Scudder.

1895. Etoblattina rogi. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 102, pl. 9, figs. 2, 3.

Lower Permian: Cassville, West Virginia.

## Etoblattina sagittaria Scudder.

1895. Etoblattina sagittaria. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 68, pl. 4, fig. 3.

Lower Permian: Cassville, West Virginia.

#### Etoblattina scholfieldi Scudder.

1893. Etoblattina scholfieldi. Scudder, Bull. U. S. Geol. Surv. No. 101, p. 15, pl. 2, fig. b.

Carboniferous: East Providence, Rhode Island.

1895. Etoblattina scholfieldi. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 71, pl. 4, fig. 7.

Lower (†) Coal Measures: East Providence, Rhode Island.

#### Etoblattina secreta Scudder.

1895. Etoblattina secreta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 105, pl. 9, figs. 6, 7.

Lower Permian: Cassville, West Virginia.

#### Etoblattina stipata Scudder.

1888. Etoblattina stipata. Scudder, Proc. Bost. Soc. Nat. Hist., vol. 24, p. 50.
Barren Coal Measures: Wills Creek, Richmond, Ohio.

1895. Etoblattina stipata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 98, pl. 8, fig. 3.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

#### Etoblattina strigosa Scudder.

1888. Etoblattina etrigosa. Scudder, Proc. Bost. Soc. Nat. Hist., vol. 24, p. 52. Barren Coal Measures: Wills Creek, Richmond, Ohio.

1895. Etoblattina strigosa. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 72, pl. 4, fig. 10.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

#### Etoblattina tenuis Scudder.

1888. Etoblattina tenuis. Scudder, Proc. Bost. Soc. Nat. Hist., vol. 24, p. 46. Barren Coal Measures: Richmond, Ohio.

1895. Etoblattina tenuis. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 87, pl 6, fig. 6.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

#### Etoblattina variegata Scudder.

1888. Etoblattina variegata. Scudder, Proc. Bost. Soc. Nat. Hist., vol. 24, p. 51. Barren Coal Measures: Wills Creek, Richmond, Ohio.

1895. Etoblattina variegata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 99, pl. 8, fig. 10.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

## Etoblattina venusta Lesquereux.

1860. Blattina remusta. Lesquereux, 2d Rept. Geol. Surv. Ark., p. 314, pl. 5, fig. 11. Carboniferous: Frog Bayon, Arkansas.

1879. Etoblattina venusta. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 70, pl. 6, fig. 12.

Carboniferous: Frog Bayou, Arkansas.

## Etoblattina venusta Lesquereux—Continued.

- 1890. Etoblattina venusta. Scudder, Foss. Insc. N. A., vol. 1, p. 90, pl. 6, fig. 12. Carboniferous: Frog Bayou, Arkansas.
- 1895. Etoblattina venusta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 73. Millstone Grit: Frog Bayou, Arkansas.

## Etoblattina willsiana Scudder.

1895. Etoblattina willsiana. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 82, pl. 5, fig. 13.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

## Etoblattina (species undetermined).

- 1893. Etoblattina sp. Scudder, Bull. U. S. Geol. Surv. No. 101, p. 13. pl. 2, fig. c. Carboniferous: Silver Spring, East Providence, Rhode Island.
- 1893. Etoblattina sp. Scudder, Bull. U. S. Geol. Surv. No. 101, p. 16, pl. 2, fig. k. Carboniferous: Fenner's Ledge, in Cranston, Rhode Island.
- 1893. Etoblattina sp. Scudder, Bull. U. S. Geol. Surv. No. 101, p. 18, pl. 2, fig. h. Carboniferous: Pawtucket, Rhode Island.
- 1895. Etoblattina sp. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 110, pl. 12, fig. 2. Lower (†) Coal Measures: East Providence, Rhode Island.
- 1895. Etoblattina (?) sp. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 111, pl. 12, fig. 4.

Lower (†) Coal Measures: Cranston, Rhode Island.

- 1895. Etoblattina sp. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 77, pl. 5, fig. 2.

  Lower (†) Coal Measures: Pawtucket, Rhode Island.
- 1895. Etoblattina sp. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 110, pl. 10, figs. 14, 15.

Lower Permian: Cassville, West Virginia.

## EUCÆNUS Scudder, 1884.

#### Eucænus ovalis Scudder.

1885. Eucenus ovalis. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 325, pl. 29, fig. 4.

Carboniferous: Mazon Creek, Illinois.

1890. Eucanus ovalis. Scudder, Foss. Insc. N. A., vol. 1, p. 289, pl. 15, fig. 4. Carboniferous: Mazon Creek, Illinois.

#### EUCHONDRIA Meek, 1874.

## Euchondria neglecta Geinitz.

- 1866. Pecten neglectus. Geinitz, Carb. und Dyas in Nebr., p. 33, tab. 2, fig. 17. Nebraska City, Nebraska.
- 1872. Aviculopecten neglectus. Meek, U. S. Geol. Surv. Nebr., p. 193, pl. 9, figs. 1a, b. Upper Coal Measures: Nebraska City, Nebraska. Coal Measures: Illinois.
- 1873. Ariculopecten neglectus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 589, pl. 26, fig. 7.
  Upper and Lower Coal Measures: Illinois.
- 1874. Euchondria neglectus. Meek, Am. Jour. Sci. (3), vol. 7, p. 445.
- 1874. Euchondria neglecta. Meek, Am. Jour. Sci. (3), vol. 7, pp. 488, 489.
- 1884. Euchondria reglectus. Hall, Rep. N. Y. State Geol. for 1881, pl. 1, figs. 10, 11. Coal Measures: Illinois.
- 1888. Aviculopeoten neglectus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 232. Lower Coal Measures: Des Moines, Iowa.
- 1894. Euchondria neglecta. Keyes, Mo. Geol. Surv., vol. 5, p. 115. Upper Coal Measures: Kansas City, Missouri.

## EUCLADOCRINUS Meek, 1871.

## Eucladocrinus millebrachiatus Wachsmuth and Springer.

1878. Eucladocrinus millebrachiatus. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil., p. 245.

Burlington and Keokuk transition bed: Near Burlington, Iowa.

1897. Eucladocrinus millebrachiatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 720, pl. 73, fig. 1; pl. 74, figs. 2-9.

Burlington and Keokuk transition bed: Near Burlington, Iowa; Pleasant Grove, Iowa.

Keokuk Group: Niota and Nauvoo, Illinois.

## Eucladocrinus millebrachiatus var. immaturus Wachsmuth and Springer.

1897. Eucladocrinus millebrachiatus var. immaturus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 722, pl. 73, figs. 2, 3.

Burlington and Keokuk transition bed: Near Burlington, Iowa.

#### Eucladocrinus montanensis Meek.

1872. Platycrinites (Eucladocrinus) Montanaesis. Meek, U. S. Geol. Surv. Mont. and Adj. Terr. Rept. for 1871, p. 373.

Carboniferous: Utah or Wyoming.

1897. Eucladocrinus montanensis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 723, pl. 72, fig. 5.

Subcarboniferous: Montana.

#### Eucladocrinus pleurovimenus White.

1858. Platycrinus discoidens. Hall, Geol. Ia., vol. 1, pt. 2, p. 535, pl. 8, figs. 8a, b. (Not P. discoidens O. & S., 1850.)

Burlington L. S.: Burlington, Iowa.

1862. Platycrinus pleurovimenus. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 17. Upper Burlington L. S.: Burlington, Iowa.

1894. Eucladocrinus pleurovimenus. Keyes, Mo. Geol. Surv., vol. 4, p. 202. Upper Burlington L. S.: Ash Grove, Sedalia, and Hannibal, Missouri.

1897. Eucladocrinus pleurovimenus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 724, pl. 73, fig. 4; pl. 74, fig. 1.

Upper Burlington L. S.: Burlington and Augusta, Iowa.

## Eucladocrinus prænuntius Wachsmuth and Springer.

1878. Platycrinus prænuntius. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil., p. 249.

Upper Burlington L. S.: Burlington, Iowa.

1894. Platycrinus prænuntius. Keyes, Mo. Geol. Surv., vol. 4, p. 198. Burlington L. S.: Sedalia, Missouri.

1897. Eucladocrinus prænuntius. Wachsmuth and Springer, N. Am. Crin. Cam., p. 726, pl. 73, fig. 5.
Upper Burlington L. S.: Burlington, Iowa; Missouri.

#### Eucladocrinus tuberosus Hall.

1858. Platyorinus tuberosus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 534, pl. 8, figs. 7a, b. Burlington L. S.: Burlington, Iowa.

1891. Platycrinus occidentalis. Miller, Bull. Geol. Surv. Mo., No. 4, p. 10, pl. 1, figs. 5, 6.

Burlington Group: Near Sedalia, Missouri.

1897. Eucladocrinus tuberosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 728, pl. 72, figs. 3, 4a-c.

Upper Burlington L. S.: Burlington, Iowa; Sedalia, Missouri.

## (EULIMA Risso, 1826.)

## Eulima peracuta Meek and Worthen. See Bulimorpha peracuta.

## Eretmocrinus ramulosus Hall—Continued.

1897. Eretmocrinus ramulosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 387, pl. 37, figs. 4a, b, 5a-d.

Keokuk Group: Keokuk and Augusta, Iowa; Nauvoo, Illinois; White's Creek Springs, Tennessee.

## Eretmocrinus remibrachiatus Hall.

- 1861. Actinocrinus remibrachiatus. Hall, Desc. New Spec. Crin., p. 11. Burlington L. S.
- 1872. Actinocrinus (Eretmocrinus) remibrachiatus. Hall, Photo. Plates of Crinoids, pl. 4, figs. 8, 9.
- 1873. Batocrinus (Eretmocrinus) remibrachiatus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 370, pl. 10, fig. 5.
  Burlington L. S.: Burlington, Iowa.
- 1894. Eretmoorinus remitrachiatus. Keyes, Mo. Geol. Surv., vol. 4, p. 178. Upper Burlington L. S.: Ash Grove, Missouri.
- 1897. Eretmocrinus remibrachiatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 388, pl. 37, figs. 2a, b. Upper Burlington L. S.: Burlington, Iowa.

## Eretmocrinus remibrachiatus var. expansus Wachsmuth and Springer.

- 1894. Eretmocrinus lyonanus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 17, pl. 3, fig. 1. (Not E. lyonanus Miller, 1891.)

  Upper Burlington Group: Near Burlington, Iowa.
- 1894. Ereimocrinus cassedayanus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist. (Corrigenda.)
- 1897. Eretmocrinus remibrachiatus var. expansus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 390, pl. 36, fig. 1; pl. 37, figs. 1a, b; pl. 44, fig. 9. Burlington and Keokuk Transition Bed: Near Burlington, Iowa; Henderson County, Illinois.

## Eretmocrinus rugosus Wachsmuth and Springer.

1897. Eretmocrinus rugosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 402, pl. 36, figs. 9a-c.
Lower Burlington L. S.: Burlington, Iowa.

## Eretmocrinus varsoviensis. See Dizygocrinus originarius.

Eretmocrinus verneuilianus. See Macrocrinus verneuilianus.

### ERIDOPORA Ulrich, 1882.

#### Eridopora macrostoma Ulrich.

1882. Eridopora macrostoma. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 5, p. 137, pl. 6, figs. 2, 2a.
Kaskaskia Group: Point Burnside, Kentucky.

#### Eridopora punctifera Ulrich.

1882. Eridopora punctifera. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 5, p. 138, pl. 6, fig. 3.

Kaskaskia Group: Point Burnside, Kentucky.

## ERISOCRINUS Meek and Worthen, 1865.

## Erisocrinus antiquus Meek and Worthen.

- 1869. Erisocrinus antiquus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 71. Lower Burlington L. S.: Burlington, Iowa.
- 1873. Erisocrinus antiquus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 447, pl. 2. fig. 3.

Burlington L. S.: Burlington, Iowa.

#### Erisocrinus conideus Meek and Worthen.

1865. Erisocrinus conideus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 150. Coal Measures: Springfield, Illinois.

1866. Erisocrinus conideus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 318, fig. 35.

Coal Measures: Springfield, Illinois.

Erisocrinus inflexus. See Ceriocrinus inflexus.

Erisocrinus nebrascensis. See Erisocrinus typus.

Erisocrinus planus. See Ceriocrinus planus.

Erisocrinus tuberculatus. See Eupachycrinus tuberculatus.

## Erisocrinus typus Meek and Worthen.

1865. Erisocrinus typus. Meek and Worthen, Am. Jour. Sci. (2), vol. 39, p. 174.
Coal Measures: Near Springfield, Illinois.

1865. Eriscorinus Nebrascensis. Meek and Worthen, Am. Jour. Sci. (2), vol. 39, p. 174.

Coal Measures: Bellevue, Nebraska.

1865. Philocrinus pelvis. Meek and Worthen, Am. Jour. Sci. (2), vol. 39, p. 350.

1866. Eriscorinus typus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 317, fgs. 33, 34.

Coal Measures: Near Springfield, Illinois.

1872. Erisocrinus typus. Meek, U. S. Geol. Surv. Nebr., p. 146, pl. 1, 11gs. 3a, b. Upper Coal Measures: Bellevue, Nebraska; Springfield, Illinois.

1873. Erisocrinus typus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 561, pl. 24, fig. 6.

Coal Measures: Springfield, Illinois.

1876. Erisocrinus typus. White, Powell's Rep. Geol. Uinta Mts., p. 89.
Lower Aubrey Group: Confluence of Grand and Green rivers.

1880. Erisocrinus typus. White, Cont. to Inv. Pal., No. 6, p. 126, pl. 33, fig. 5a. Upper Coal Measures: Bellevue, Nebraska.

## Erisocrinus whitei Meek and Worthen.

1869. Erisocrinus Whitei. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 72. Upper Burlington L. S.: Burlington, Iowa.

1873. Erisocrinus Whitei. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 448, pl. 2, fig. 2.

Burlington L. S.: Burlington, Iowa.

## ESCHARA Lamark, 1801.

#### Eschara concentrica Prout.

1858. Eschara (?) concentrica. Prout, Trans. St. Louis Acad. Sci , vol. 1, p. 234. Carboniferous L. S.: Organ Mountains, New Mexico.

#### Eschara tuberculata Prout.

1858. Eschara (†) tuberculata. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 234. Carboniferous L. S.: Organ Mountains, New Mexico.

## ESTHERIA Ruppell, 1837.

## Estheria dawsoni Jones.

1868. Estheria. Dawson, Acad. Geol., p. 256, fig. 78d. Carboniferous: Horton Bluff, Nova Scotia.

1870. Estheria Dawsoni. Jones, Geol. Mag. (1), vol. 7, p. 220, pl. 9, fig. 15. Lower Carboniferous: Horton, Nova Scotia.

1878. Estheria Dawsoni. Jones, Geol. Mag. (2), vol. 5, p. 101, pl. 3, fig. 2. Lower Carboniferous: Scotland,

#### Estheria dawsoni Jones—Continued.

1884. Estheria Dawsoni. Jones and Kirkby, Gool. Mag. (3), vol. 1, p. 361, pl. 12,

Lower Carboniferous: Horton, Nova Scotia.

#### ETOBLATTINA Scudder, 1882.

#### Etoblattina accubita Scudder.

1895. Etoblattina accubita. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 88, pl. 7, fig. 2.

Lower Permian: Cassville, West Virginia.

#### Etoblattina angusta Scudder.

1895. Etoblattina angustata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 100, pl. 8, fig. 8.

Lower Permian: Cassville, West Virginia.

## Etoblattina aperta Scudder.

1895. Etoblattina aperta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 80, pl. 5,

Lower Permian: Cassville, West Virginia.

#### Etoblattina arcta Scudder.

1895. Etoblattina arcta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 97, pl. 8, fig. 5.

Lower Permian: Cassville, West Virginia.

#### Etoblattina balteata Scudder.

1879. Gerablattina balteata. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 110, pl. 6, figs. 9, 10.

Permo-Carboniferous: Cassville, Monongalia County, West Virginia; Bellaire, Ohio.

1880. Gerablattina balteata. Fontaine and White, 2d Geol. Surv. Penn., Rept. PP, p. 144, pl. 38, fig. 5.

Roof Shales of Waynesburg Coal: Cassville, West Virginia.

1890. Gerablattina balteata. Scudder, Foss. Insc. N. A., vol. 1, p. 130, pl. 6, figs. 9, 10. Permo-Carboniferous: Cassville, West Virginia; and Bellaire, Ohio.

1895, Etoblattina balteata. Soudder, Bull. U. S. Geol. Surv. No. 124, p. 73.

Lower Permian: Cassville, West Virginia.

Coal Measures: Bellaire, Ohio.

#### Etoblattina benedicta Scudder.

1895. Etoblattina benedicta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 84, pl. 5.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

#### Etoblattina clarkii Scudder.

1893. Etoblattina clarkii. Scudder, Bull. U. S. Geol. Surv. No. 101, p. 14, pl. 2, fig. j. Carboniferous: Pawtucket, Rhode Island.

1895. Etoblattina clarkii. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 72, pl. 5, fig. 10.

Lower (?) Coal Measures: Pawtucket, Rhode Island.

## Etoblattina clintoniana Scudder.

1895. Etoblattina clintoniana. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 66, pl. 4,

Lower Coal Measures: Gilkerston Ford, near Clinton, Missouri.

#### Etoblattina communis Scudder.

1895. Etoblattina communis. Scudder, Bull. U.S. Geol. Surv. No. 124, p. 93, pl. 7,

Lower Permian: Cassville, West Virginia.

#### Etoblattina debilis Scudder.

1895. Etoblattina debilis. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 71, pl. 4, fig. 8. Lower Permian: Cassville, West Virginia.

#### Etoblattina defossa Scudder.

1895. Etoblattina defossa. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 108, pl. 9, fig. 12.

Lower Permian: Cassville, West Virginia.

#### Etoblattina detecta Scudder.

1895. Etoblattina detecta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 75, pl. 4, figs. 12, 13.

Lower Permian: Cassville, West Virginia.

#### Etoblattina eakiniana Scudder.

1895. Etoblattina eakiniana. Scudder, Bull. U.S. Geol. Surv. No. 124, p. 88, pl. 7, fig. 1.

Lower Permian: Cassville, West Virginia.

## Etoblattina exigua Scudder.

1895. Etoblattina exigua. Soudder, Bull. U. S. Geol. Surv. No. 124, p. 76, pl. 5, fig. 4. Lower Permian: Cassville, West Virginia.

#### Etoblattina exilis Scudder.

1893. Etoblattina exilis. Scudder, Bull. U. S. Geol. Surv. No. 101, p. 17, pl. 2, fig. s. Carboniferous: Rhode Island.

1895. Etoblattina exilis. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 101, pl. 9, fig. 1.

Lower (†) Coal Measures: East Providence, Rhode Island.

## Etoblattina expugnata Scudder.

1895. Etoblattina expugnata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 102, pl. 9, fig. 4.

Lower Permian: Cassville, West Virginia.

#### Etoblattina expulsata Scudder.

1895. Etoblattina expulsata. Soudder, Bull, U. S. Geol. Surv. No. 124, p. 89, pl. 7, figs. 3, 4.

Lower Permian: Cassville, West Virginia.

## Etoblattina expuncta Scudder.

1895. Etoblattina expuncta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 79, pl. 5, fig. 6.

Lower Permian: Cassville, West Virginia.

## Etoblattina exsecuta Scudder.

1895. Etoblattina executa. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 96, pl. 8, fig. 4.

Lower Permian: Cassville, West Virginia.

## Etoblattina exsensa Scudder.

1895. Etoblattina exsensa. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 86, pl. 6, figs. 7, 8.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

#### Etoblattina fasciata Scudder.

1888. Etoblattina fasciata. Scudder, Proc. Bost. Soc. Nat. Hist., vol. 24, p. 47.
Barren Coal Measures: Richmond, Ohio; and Cassville, West Virginia.

1895. Etoblattina fasciata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 81, pl. 5, fig. 11.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

#### Etoblattina fossa Scudder.

1895. Etoblattina fossa. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 70, pl. 4, fig. 5.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

## Eupachycrinus platybasis White.

1876. Eupachycrinus platybasis. White, Powell's Rep. Geol. Uinta Mts., p. 108. Lower Aubrey Group: Confluence of Grand and Green rivers, Utah.

1880. Eupachycrinus platybasis. White, Cont. to Inv. Pal., No. 6, p. 124, pl. 33, fig. 8a.

Lower Aubrey Group: Confluence of Grand and Green rivers, Utah.

## Eupachycrinus quatuor-decem-brachialis Lyon.

1857. Graphiocrinus 14 brachialis. Lyon, Geol. Rep. Ky., vol. 3, p. 477, pl. 1, figs. 2-2b.

. Lower calcareous beds of Millstone Grit: Crittenden County, Kentucky.

1858. Cyathorrinus (?) pentalobus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 687, pl. 25, figs. 5a, b.

Kaskaskia L. S.: Pope County, Illinois.

## Eupachycrinus sancti-ludovici. See Hydreionocrinus sancti-ludovici.

## Eupachycrinus spartarius Miller.

1879. Eupachycrinus spartarius. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 2, p. 38, pl. 8, fig. 2.

Kaskaskia Group: Pulaski County, Kentucky.

1879. Enpachycrinus germanus. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 2, p. 40, pl. 8, fig. 3.

Kaskaskia Group: Pulaski County, Kentucky.

## Eupachycrinus sphæralis Miller and Gurley.

1890. Eupachycrinus sphæralis. Miller and Gurley, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 5, pl. 1, figs. 3, 4.

Upper Coal Measures: Kansas City, Missouri.

1890. Eupachycrinus sphæralis. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 329, pl. 1, figs. 3, 4.

Upper Coal Measures: Kansas City, Missouri.

#### Eupachycrinus subtumidus Worthen.

1873. Zeacrinus subtumidus. Worthen, Geol. Surv. Ill., vol. 5, p. 548, pl. 21, fig. 1. Chester Group: Bay City, Pope County, Illinois.

## Eupachycrinus tuberculatus Meek and Worthen.

1865. Erisocrinus tuberculatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 150.

Upper Coal Measures: Sugar Creek, Sangamon County, Illinois, and near Brighton, Jersey County, Illinois.

1866. Erisocrinus tuberculatus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 319.
Coal Measures: Sugar Creek, Sangamon County, Illinois, and near Brighton, Jersey County, Illinois.

1873. Eupachyerinus tuberculatus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 566, p. 24, fig. 9.

Coal Measures: Near Brighton, Jersey County, Illinois; Parke County, Illinois.

#### Eupachycrinus tumulosus Miller.

1891. Eupachycrinus tumulosus. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 70, pl. 9, figs. 9, 10.

Kaskaskia Group: Breckinridge County, Kentucky.

1892. Eupachycrinus tumulosus. Miller, 17th Rep. Geol. Surv. Ind., p. 680, pl. 9, figs. 9, 10.

Kaskaskia Group: Breckinridge County, Kentucky.

#### Eupachycrinus verrucosus White and St. John.

1868. Hydreionocrinus? verrucosus. White and St. John, Trans. Chicago Acad. Sci., vol. 1, p. 117, fig. 1.

Upper Coal Measures: Western Iowa.

#### Etoblattina invisa Scudder.

1895. Etoblattina invisa. Scudder, Bull. U. S. Geol. Sur. No. 124, p. 106, pl. 9, fig. 9.

Lower Permian: Cassville, West Virginia.

#### Etoblattina jeffersoniana Scudder.

1895. Etoblattina jeffersoniana. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 71, pl. 5, fig. 7.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

## Etoblattina lata Scudder.

1895. Etoblattina lata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 67, pl. 4, fig. 2. Lower Permian: Cassville, West Virginia.

#### Etoblattina latebricola Scudder.

1895. Etoblattina latebricola. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 108, pl. 9, fig. 11.

Lower (†) Coal Measures: East Providence, Rhode Island.

## Etoblattina lesquereuxii Scudder.

1879. Etoblattina Lesquereuxii. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 67, pl. 6, figs. 3, 4.

Middle Carboniferous: Pittston, Pennsylvania.

1890. Etoblattina Lesquereuxii. Scudder, Foss. Insc. N. Am., vol. 1, p. 87, pl. 6, figs. 3, 4.
Middle Carboniferous: Pittston, Pennsylvania.

1895. Etoblattina lesquereuxii. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 83. Coal Measures: Yatesville, near Pittston, Pennsylvania.

#### Etoblattina macerata Scudder.

1895. Etoblattina macerata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 91, pl. 7, fig. 6.

Lower Permian: Cassville, West Virginia.

#### Etoblattina macilenta Scudder.

1895. Etoblattina macilenta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 101, pl. 8, fig. 9.

Lower Permian: Cassville, West Virginia.

#### Etoblattina mactata Scudder.

1895. Etoblattina mactata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 92, pl. 7, fig. 9.

Lower Permian: Cassville, West Virginia.

## Etoblattina maledicta Scudder.

1895. Etoblattina maledicta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 83, pl. 6, figs. 1-3.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

#### Etoblattina marginata Scudder.

1888. Etoblattina marginata. Scudder, Proc. Bost. Soc. Nat. Hist., vol. 24, p. 48. Barren Coal Measures: Richmond, Ohio.

1895. Etoblattina marginata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 95, pl. 8, fig. 2.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

#### Etoblattina mazona Scudder.

1882. Etoblattina mazona. Scudder, Proc. Bost. Soc. Nat. Hist., vol. 21, p. 391. Coal Measures: Mazon Creek, Illinois.

1882. Etoblattina mazona: Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 181, pl. 10.

Carboniferous: Mazon Creek, Illinois.

Bull. 153——17

#### Etoblattina mazona Scudder—Continued.

1890. Etoblattina mazona. Scudder, Foss. Insc. N. A., vol. 1, p. 233, pl. 7a. Carboniferous: Mazon Creek, Illinois.

1895. Etoblattina mazona. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 89, pl. 6, fig. 5.
Lower Coal Measures: Mazon Creek, Illinois.

## Etoblattina mediana Scudder.

1895. Etoblattina mediana. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 69, pl. 4, fig. 4.

Lower Permian: Cassville, West Virginia.

#### Etoblattina macronata Scudder.

1895. Ztoblattina macronata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 74, pl. 5, fig. 3.

Lower Permian: Cassville, West Virginia.

#### Etoblattina obatra Scudder.

1895. Etoblattina obatra. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 103, pl. 9, fig. 5.

Lower Permian: Cassville, West Virginia.

#### Etoblattina occidentalis Scudder.

1890. Etoblattina occidentalis. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 410, pl. 32, fig. 4.

Carboniferous: Lawrence, Kansas.

1890. Etoblattina occidentalis. Scudder, Foss. Insc. N. A., vol. 1, p. 386, pl. 24, fig. 4. Carboniferous: Lawrence, Kansas.

1895. Etoblattina occidentalis. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 76. Upper Coal Measures: Lawrence, Kansas.

#### Etoblattina occulta Scudder.

1895. Etoblattina occulta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 107, pl. 9, fig. 13.

Lower Permian: Cassville, West Virginia.

#### Etoblattina ovata Scudder.

1895. Etoblattina orata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 70, pl. 4, fig. 6. Lower Permian: Cassville, West Virginia.

#### Etoblattina patiens Scudder.

1895. Etoblattina patiens. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 73, pl. 4, fig. 9. Lower Permian: Cassville, West Virginia.

## Etoblattina prædulcis Scudder.

1895. Etoblattina prædulcis. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 98, pl. 8, fig. 12.

Lower Permian: Cassville, West Virginia.

## Etoblattina ramosa Scudder.

1895. Etoblattina ramosa. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 81, pl. 5, fig. 12.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

#### Etoblattina recidiva Scudder.

1895. Etoblattina recidiva. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 109, pl. 9, fig. 14.

Lower Permian: Cassville, West Virginia.

## Etoblattina reliqua Scudder.

1893. Etoblattina reliqua. Scudder, Bull. U. S. Geol. Surv. No. 101, p. 18, pl. 2, fig. 9. Carboniferous: Pawtucket, Rhode Island.

1895. Etoblattina reliqua. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 106, pl. 9, fig. 10.

Lower (?) Coal Measures: Pawtucket, Rhode Island.

#### Etoblattina residua Scudder

1895. Etoblattina residua. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 78, pl. 5, fig. 1. Lower Permian: Cassville, West Virginia.

## Etoblattina rogi Scudder.

1895. Etoblattina rogi. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 102, pl. 9, figs. 2, 3.

Lower Permian: Cassville, West Virginia.

## Etoblattina sagittaria Scudder.

1895. Etoblattina sagittaria. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 68, pl. 4, fig. 3.

Lower Permian: Cassville, West Virginia.

## Etoblattina scholfieldi Scudder.

1893. Etoblattina scholfieldi. Scudder, Bull. U. S. Geol. Surv. No. 101, p. 15, pl. 2, fig. b.

Carboniferous: East Providence, Rhode Island.

1895. Etoblattina scholfieldi. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 71, pl. 4, fig. 7.

Lower (?) Coal Measures: East Providence, Rhode Island.

#### Etoblattina secreta Scudder.

1895. Etoblattina secreta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 105, pl. 9, figs. 6, 7.

Lower Permian: Cassville, West Virginia.

## Etoblattina stipata Scudder.

1888. Etoblattina stipata. Scudder, Proc. Bost. Soc. Nat. Hist., vol. 24, p. 50. Barren Coal Measures: Wills Creek, Richmond, Ohio.

1895. Etoblattina stipata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 98, pl. 8, fig. 3.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

#### Etoblattina strigosa Scudder.

1888. Etoblattina strigosa. Scudder, Proc. Bost. Soc. Nat. Hist., vol. 24, p. 52. Barren Coal Measures: Wills Creek, Richmond, Ohio.

1895. Etoblattina strigosa. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 72, pl. 4, fig. 10.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

#### Etoblattina tenuis Scudder.

1888. Etoblattina tenuis. Scudder, Proc. Bost. Soc. Nat. Hist., vol. 24, p. 46.
Barren Coal Measures: Richmond, Ohio.

1895. Etoblattina tenuis. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 87, pl. 6, fig. 6.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

## Etoblattina variegata Scudder.

1888. Etoblattina variegata. Scudder, Proc. Bost. Soc. Nat. Hist., vol. 24, p. 51. Barren Coal Measures: Wills Creek, Richmond, Ohio.

1895. Etoblattina variegata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 99, pl. 8, fig. 10.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

## Etoblattina venusta Lesquereux.

1860. Blattina venusta. Lesquereux, 2d Rept. Geol. Surv. Ark., p. 314, pl. 5, fig. 11. Carboniferous: Frog Bayou, Arkansas.

1879. Etoblattina venusta. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 70, pl. 6, fig. 12.

Carboniferous: Frog Bayou, Arkansas.

## Etoblattina venusta Lesquereux—Continued.

- 1890. Etoblattina renusta. Scudder, Foss. Insc. N. A., vol. 1, p. 90, pl. 6, fig. 12. Carboniferous: Frog Bayou, Arkansas.
- 1895. Etoblattina venusta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 73. Millstone Grit: Frog Bayou, Arkansas.

#### Etoblattina willsiana Scudder.

1895. Etoblattina willeiana. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 82, pl. 5,

Lower Coal Measures: Wills Creek, Richmond, Ohio.

## Etoblattina (species undetermined).

- 1893. Etoblattina sp. Scudder, Bull. U. S. Geol. Surv. No. 101, p. 13, pl. 2, fig. c. Carboniferous: Silver Spring, East Providence, Rhode Island.
- 1893. Etoblattina sp. Scudder, Bull. U. S. Geol. Surv. No. 101, p. 16, pl. 2, fig. k. Carboniferous: Fenner's Ledge, in Cranston, Rhode Island.
- 1893. Etoblattina sp. Scudder, Bull. U. S. Geol. Surv. No. 101, p. 18, pl. 2, fig. h. Carboniferous: Pawtucket, Rhode Island.
- 1895. Etoblattina sp. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 110, pl. 12, fig. 2. Lower (?) Coal Measures: East Providence, Rhode Island.
- 1895. Etoblattina (†) sp. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 111, pl. 12, fig. 4.

Lower (?) Coal Measures: Cranston, Rhode Island.

- 1895. Etoblattina sp. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 77, pl. 5, fig. 2. Lower (?) Coal Measures: Pawtucket, Rhode Island.
- 1895. Etoblattina sp. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 110, pl. 10, figs. 14, 15.

Lower Permian: Cassville, West Virginia.

#### EUCÆNUS Scudder, 1884.

#### Eucænus ovalis Scudder.

1885. Eucœnus oralis. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 325, pl. 29, fig. 4.

Carboniferous: Mazon Creek, Illinois.

1890. Eucanus ovalis. Scudder, Foss. Insc. N. A., vol. 1, p. 289, pl. 15, fig. 4. Carboniferous: Mazon Creek, Illinois.

## EUCHONDRIA Meek, 1874.

## Euchondria neglecta Geinitz.

- 1866. Pecten neglectus. Geinitz, Carb. und Dyas in Nebr., p. 33, tab. 2, fig. 17. Nebraska City, Nebraska.
- 1872. Aviculopecten neglectus. Meek, U.S. Geol. Surv. Nebr., p. 193, pl. 9, figs. 1a, b. Upper Coal Measures: Nebraska City, Nebraska. Coal Measures: Illinois.
- 1873. Ariculopecten neglectus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 589. pl. 26, fig. 7. Upper and Lower Coal Measures: Illinois.
- 1874. Euchondria neglectus. Meek, Am. Jour. Sci. (3), vol. 7, p. 445.
- 1874. Euchondria neglecta. Meek, Am. Jour. Sci. (3), vol. 7, pp. 488, 489.
  1884. Euchondria neglectus. Hall, Rep. N. Y. State Geol. for 1881, pl. 1, figs. 10, 11. Coal Measures: Illinois.
- 1888. Ariculopecten neglectus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 232. Lower Coal Measures: Des Moines, Iowa.
- 1894. Euchondria neglecta. Keyes, Mo. Geol. Surv., vol. 5, p. 115. Upper Coal Measures: Kansas City, Missouri.

#### EUCLADOCRINUS Meek, 1871.

## Eucladocrinus millebrachiatus Wachsmuth and Springer.

1878. Eucladocrinus millebrachiatus. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil., p. 245.

Burlington and Keokuk transition bed: Near Burlington, Iowa.

1897. Eucladocrinus millebrachiatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 720, pl. 73, fig. 1; pl. 74, figs. 2-9.

Burlington and Keokuk transition bed: Near Burlington, Iowa; Pleasant Grove, Iowa.

Keokuk Group: Niota and Nauvoo, Illinois,

## Eucladocrinus millebrachiatus var. immaturus Wachsmuth and Springer.

1897. Euoladoorinus millebrachiatus var. immaturus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 722, pl. 73, figs. 2, 3.

Burlington and Keokuk transition bed: Near Burlington, Iowa.

#### Eucladocrinus montanensis Meek.

1872. Platycrinites (Eucladocrinus) Montanaesis. Meek, U. S. Geol. Surv. Mont. and Adj. Terr. Rept. for 1871, p. 373.

Carboniferous: Utah or Wyoming.

 Eucladocrinus montanensis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 723, pl. 72, fig. 5.

Subcarboniferous: Montana.

## Eucladocrinus pleurovimenus White.

1858. Platycrinus discoidens. Hall, Geol. Ia., vol. 1, pt. 2, p. 535, pl. 8, figs. 8a, b. (Not P. discoidens O. & S., 1850.)
Burlington L. S.: Burlington, Iowa.

1862. Platycrinus pleurovimenus. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 17. Upper Burlington L. S.: Burlington, lowa.

1894. Eucladocrinus pleurovimenus. Keyes, Mo. Geol. Surv., vol. 4, p. 202.
Upper Burlington L. S.: Ash Grove, Sedalia, and Hannibal, Missouri.

1897. Eucladocrinus pleurovimenus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 724, pl. 73, fig. 4; pl. 74, fig. 1.

Upper Burlington L. S.: Burlington and Augusta, Iowa.

## Eucladocrinus prænuntius Wachsmuth and Springer.

1878. Platyorinus prænuntius. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil., p. 249.

Upper Burlington L. S.: Burlington, Iowa.

1894. Platycrinus prænuntius. Keyes, Mo. Geol. Surv., vol. 4, p. 198. Burlington L. S.: Sedalia, Missouri.

1897. Eucladocrinus prænuntius. Wachsmuth and Springer, N. Am. Crin. Cam., p. 726, pl. 73, fig. 5.
Upper Burlington L. S.: Burlington, Iowa; Missouri.

#### Eucladocrinus tuberosus Hall.

1858. Platyorinus tuberosus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 534, pl. 8, figs. 7a, b. Burlington L. S.: Burlington, Iowa.

1891. Platycrinus occidentalis. Miller, Bull. Geol. Surv. Mo., No. 4, p. 10, pl. 1, figs. 5, 6.

Burlington Group: Near Sedalia, Missouri.

1897. Eucladocrinus tuberosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 728, pl. 72, figs. 3, 4a-c.

Upper Burlington L. S.: Burlington, Iowa; Sedalia, Missouri.

#### (EULIMA Risso, 1826.)

#### Eulima peracuta Meek and Worthen. See Bulimorpha peracuta.

## EUMETRIA Hall, 1864.

#### Eumetria altirostris White.

1862. Retzia (Acambona?) altirostris. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 28.

Chemung S. S.: Burlington, lowa.

## Eumetria marcyi Shumard.

- 1852. Terebratula serpentaria? Owen, Geol. Rep. Wis., Iowa, and Minn., tab. 3A, fig. 13. (Not De Koninck.)
  - Carboniferous: Skunk River, Iowa.
- 1854. Terebratula marcyi. Shumard, Marcy's Exp. Red River of Louis., p. 177, pl. 1, figs. 4a, b.

Carboniferous: Washington and Crawford counties, Arkansas.

- 1856. Retzia Vernculiana. Hall, Trans. Albany Inst., vol. 4, p. 9. St. Louis L. S.: Bloomington and Spergen Hill, Indiana.
- 1858. Retzia verneuliana. Hall, Geol. Iowa, vol. 1, pt. 2, p. 657, pl. 23, figs. 1a-d. Warsaw L. S.: Spergeu Hill and Bloomington, Indiana.
- 1858. Retzia vera. Hall, Geol. Iowa, vol. 1, pt. 2, p. 704, pl. 27, fig. 3a. Kaskaskia L. S.: Chester, Illinois.
- 1858. Retzia rera var. costata. Hall, Geol. Iowa, vol. 1, pt. 2, p. 704, pl. 27, figs. 3a, b.
  Kaskaskia L. S.: Chester, Illinois.
- 1882. Eumetria Verneuilana. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 50, pl. 6, figs. 28-30.
  - St. Louis Group: Spergen Hill, Paynter's Hill, and Bloomington, Indiana; Alton, Illinois.
- 1883. Eumetria verneuiliana. Hall, 12th Rep. Geol. Surv. Ind., p. 335, p. 29, figs. 28-30.
  - St. Louis Group: Spergen Hill, Lanesville, and Bloomington, Indiana.
- 1884. Retzia Verneuiliana. Walcott, Pal. Eureka Dist., p. 220, pl. 7, figs. 5, 5a. Lower Carboniferous: Little Belt Mountains, near Clendenin, Montana.
- 1894. Eumetria Verneuiliana. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 37, figs. 1-4, 6, 10.
  - St. Louis Group: Spergen Hill, Indiana.
- 1894. Retzia verneuiliana. Keyes, Mo. Geol. Surv., vol. 5, p. 95. St. Louis L. S.: St. Louis, Missouri.
- 1894. Eumetria rera var. costata. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 37, figs. 5, 11.
  Chester L. S.: Chester, Illinois; Crittenden County, Kentucky.
- 1894. Eumetria rera. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 37,
  - Chester L. S.: Crittenden County, Kentucky.
- 1894. Retzia rera. Keyes, Mo. Geol. Surv., vol. 5, p. 95. Kaskaskia L. S.: Ste. Mary, Missouri.
- 1895. Eumetria vera var. costata. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 51, figs. 27-33.
  - Chester L. S.: Crittenden County, Kentucky; Chester, Illinois.
- 1895. Eumetria vera. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 51, figs. 36, 37. Chester Group: Crittenden County, Kentucky.
- 1895. Eumetria Verneuiliana. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 51, figs. 13-26, 34, 35; pl. 83, figs. 26, 27.
  St. Louis Group: Spergen Hill, Indiana; Greene County, Missouri.
- 1897. Eumetria verneuilana. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 259.

# Batesville S. S.: Batesville, Arkansas. Eumetria osagensis. See Acambona osagensis.

Eumetria punctulifera. See Hustedia mormoni.

Eumetria vera. See Eumetria marcyi.

Eumetria veru var. costatu. See Eumetria marcyi.

Eumetria verneuilana. See Eumetria marcyi.

#### Eumetria woosteri White.

1879. Retzia woosteri. White, Bull. U. S. Geol. and Geog. Surv. Terr., vol. 5, p. 215.

Carboniferous: 18 miles north of Greely, Colorado.

1880. Retzia woosteri. White, Cont. to Inv. Pal. No. 6, p. 134, pl. 34, figs. 8a, b. Coal Measures: 32 miles west and 18 miles north of Greely, Colorado.

## (EUMICROTIS Meek, 1864.)

Eumicrotis hawni. See Pseudomonotis hawni.

Eumicrotis hawni var. ovata. See Pseudomonotis hawni var. ovata.

Eumicrotis hawni var. sinuatu. See Pseudomonotis hawni var. sinuata.

## (EUNEMA Salter, 1859.)

Eunema salteri. Meek and Worthen. See Orthonema salteri.

## (EUOMPHALUS Sowerby, 1812.)

Euomphalus ammon. See Straparollus ammon.

Euomphalus boonensis. See Straparollus boonensis.

Euomphalus exortivus. See Straparollus exortivus.

Euomphalus gyroceras. See Phanerotinus gyroceras.

Euomphalus latus. See Straparollus latus.

Euomphalus laxus. See Straparollus luxus.

Euomphalus lens. See Straparollus lens.

Euomphalus luxus. See Straparollus luxus.

Euomphalus obtusus. See Straparollus obtusus.

Euomphalus ophirensis. See Straparollus ophirensis.

Euomphalus pernodosus. See Straparollus pernodosus.

Euomphalus perspectivus. See Straparollus planidorsatus.

Euomphalus planidorsatus. See Straparollus planidorsatus.

Euomphalus planispira. See Straparollus planispira.

Euomphalus quadrivolvis. See Straparollus quadrivolvis.

Euomphalus roberti. See Straparollus roberti.

Euomphalus rugosus. See Straparollus catilloides.

Euomphalus spergenensis. See Straparollus spergenensis.

Euomphalus spergenensis var. planorbiformis. See Straparollus spergenensis var. planorbiformis.

Euomphalus spirorbis. See Straparollus spirorbis.

Euomphalus springvalensis. See Omphalotrochus springvalensis.

Euomphalus subplanus. See Phanerotinus subplanus.

Euomphalus subquadratus. See Straparollus subquadratus.

Euomphalus subrugosus. See Straparollus catilloides.

Euomphalus umbilicatus. See Straparollus umbilicatus.

Euomphalus utahensis. See Straparollus utahensis.

Euomphalus whitneyi. See Omphalotrochus whitneyi.

## EUPACHYCRINUS Meek and Worthen, 1865.

## Eupachycrinus asperatus Worthen.

1882. Eupachycrinus asperatus. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 34.

Chester L. S.: Monroe County, Illinois.

1883. Eupachycrinus asperatus. Worthen, Geol. Surv. Ill., vol. 7, p. 311, pl. 29, fig. 4.

Chester L. S.: Monroe County, Illinois.

#### Eupachycrinus bassetti Worthen.

1875. Eupachycrinus Bassetti. Worthen, Geol. Surv. Ill., vol. 6, p. 528, pl. 32, fig. 2. Coal Measures: Vandalia, Illinois.

## Eupachycrinus boydii Meek and Worthen.

1870. Eupachycrinus Boydii. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 30. Chester Group: Chester, Illinois.

1873. Eupachycrinus Boydii. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 554, pl. 21, fig. 6.

Chester Group: Chester, Illinois.

Eupachycrinus craigii. See Ceriocrinus craigii.

#### Eupachycrinus crassus Meek and Worthen.

1860. Cyathocrinus? crassus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 392.

Lower Coal Measures: Avon, Fulton County, Illinois.

1866. Zeacrinus? crassus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 314, pl. 26, figs. 2a, b.

Coal Measures: Avon, Fulton County, Illinois.

#### Eupachycrinus fayettensis. See Ceriocrinus fayettensis.

## Eupachycrinus formosus Worthen.

1873. Zeacrinus formosus. Worthen, Geol. Surv. Ill., vol. 5, p. 549, pl. 21, fig. 2. Chester Group: Chester, Illinois.

Eupachycrinus germanus. See Eupachycrinus spartarius.

## Eupachycrinus gracilis Wetherby.

1880. Cromyocrinus gracilis. Wetherby, Jour. Cinn. Soc. Nat. Hist., vol. 2, p. 248, pl. 16, figs. 2-2e.

Kaskaskia Group: Pulaski County, Kentucky.

#### Eupachycrinus harii Miller.

1891. Eupachycrinus harii. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 71, pl. 11, fig. 8.

Coal Measures: Kansas City, Missouri.

- 1892. Eupachycrinus harii. Miller, 17th Rep. Geol. Surv. Ind., p. 681, pl. 11, fig. 8. Coal Measures: Kansas City, Missouri.
- 1894. Eupachycrinus harii. Keyes, Mo. Geol. Surv., vol. 4, p. 218, pl. 28, fig. 3. Upper Coal Measures: Kansas City, Missouri.

# Eupachycrinus magister Miller and Gurley.

1890. Eupachycrinus magister. Miller and Gurley, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 4, pl. 1, figs. 1, 2.

Upper Coal Measures; Kansas City, Missouri.

1890. Eupachycrinus magister. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 328, pl. 1, figs. 1, 2; also p. 371, pl. 10, figs. 6-8.
Upper Coal Measures: Kansas City, Missouri.

1894. Eupachyorinus magister. Keyes, Mo. Geol. Surv., vol. 4, p. 218, pl. 27, figs. 1a, b, 3.

Upper Coal Measures: Kansas City, Missouri.

## Eupachycrinus maniformis Yandell and Shumard.

1847. Cyathocrinus maniformis. Yandell and Shumard, Cont. to Geol. of Ky., p. 25, pl., fig. 2.
Grayson, Kentucky.

1858. Zeacrinus maniformis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 682, pl. 25, fig. 8. Kaskaskia L. S.: Chester, Illinois.

1894. Eupachycrinus maniformis. Keyes, Mo. Geol. Surv., vol. 4, p. 217. Kaskaskia L. S.: Chester, Illinois.

## Eupachycrinus monroensis Worthen.

1882. Eupachycrinus monroensis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 34.

Chester L. S.: Monroe County, Illinois.

1883. Eupachycrinus Monroensis. Worthen, Geol. Surv. Ill., vol. 7, p. 312, pl. 29, fig. 16.

Chester L. S.: Monroe County, Illinois.

#### Eupachycrinus mooresi Whitfield.

1882. Zeacrinus Mooresi. Whitfield, Ann. N. Y. Acad. Sci., vol. 2, p. 227.
Coal Measures: Carbon Hill, Hocking County, Ohio.

1891. Zeacrinus Mooresi. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 597, pl. 15, figs. 6-10.

Coal Measures: Carbon Hill, Hocking County, Ohio.

1895. Zeacrinus Mooresi. Whitfield, Geol. Surv. Ohio, vol. 7, p. 483, pl. 11, figs. 6-10.

Coal Measures: Carbon Hill, Hocking County, Ohio.

## Eupachycrinus orbicularis Hall.

1861. Scaphiocrinus orbicularis. Hall, Desc. New Spec. Crin., p. 7. Keokuk L. S.

1861. Scaphiocrinus orbicularis. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 311. Keokuk L. S.: Keokuk. Iowa.

1872. Scaphiocrinus orbicularis. Hall, Photo. Plates of Crin., pl. 5, figs. 7-9.

1890. Eupachycrinus orbicularis. Worthen, Geol. Surv. Ill., vcl. 8, p. 97, pl. 14, figs. 2, 2a.

Keokuk L. S.: Keokuk, Iowa.

1893. Eupachycrinus orbicularis. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 30, pl. 3, figs. 8, 9.
Keokuk L. S.: Keokuk, Iowa.

1894. Eupachycrinus orbicularis. Keyes, Mo. Geol. Surv., vol. 4, p. 217. Keokuk L. S.: Keokuk, Iowa; Hamilton, Illinois.

## Eupachycrinus parvus Miller and Gurley.

1894. Eupachycrinus parvus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 60, pl. 6, figs. 22, 23.

Upper Coal Measures: Kansas City, Missouri.

#### Eupachycrinus platybasis White.

- 1876. Eupachycrinus platybasis. White, Powell's Rep. Geol. Uinta Mts., p. 108.
  Lower Aubrey Group: Confluence of Grand and Green rivers, Utah.
- 1880. Eupachyorinus platybasis. White, Cont. to Inv. Pal., No. 6, p. 124, pl. 33, fig. 8a.

Lower Aubrey Group: Confluence of Grand and Green rivers, Utah.

#### Eupachycrinus quatuor-decem-brachialis Lyon.

- 1857. Graphiocrinus 14 brachialis. Lyon, Geol. Rep. Ky., vol. 3, p. 477, pl. 1, figs. 2-2b.
- . Lower calcareous beds of Millstone Grit: Crittenden County, Kentucky.
- 1858. Cyathocrinus (?) pentalobus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 687, pl. 25, figs. 5a, b.

Kaskaskia L. S.: Pope County, Illinois.

## Eupachycrinus sancti-ludovici. See Hydreionocrinus sancti-ludovici.

## Eupachycrinus spartarius Miller.

- 1879. Eupachycrinus spartarius. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 2, p. 38, pl. 8, fig. 2.
  - Kaskaskia Group: Pulaski County, Kentucky.
- 1879. Enpachycrinus germanus. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 2, p. 40, pl. 8, fig. 3.

Kaskaskia Group: Pulaski County, Kentucky.

## Eupachycrinus sphæralis Miller and Gurley.

- 1890. Eupachycrinus sphæralis. Miller and Gurley, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 5, pl. 1, figs. 3, 4.
  - Upper Coal Measures: Kansas City, Missonri.
- 1890. Eupachycrinus sphæralis. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 329, pl. 1, figs. 3, 4.

Upper Coal Measures: Kansas City, Missouri.

## Eupachycrinus subtumidus Worthen.

1873. Zeacrinus subtumidus. Worthen, Geol. Surv. Ill., vol. 5, p. 548, pl. 21, fig. 1. Chester Group: Bay City, Pope County, Illinois.

#### Eupachycrinus tuberculatus Meek and Worthen.

- 1865. Erisocrinus tuberculatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 150.
  - Upper Coal Measures: Sugar Creek, Sangamon County, Illinois, and near Brighton, Jersey County, Illinois.
- 1866. Erisocrinus tuberculatus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 319.
  Coal Measures: Sugar Creek, Sangamon County, Illinois, and near Brighton, Jersey County, Illinois.
- 1873. Eupachycrinus tuberculatus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 566, p. 24, fig. 9.
  - Coal Measures: Near Brighton, Jersey County, Illinois; Parke County, Illinois.

#### Eupachycrinus tumulosus Miller.

- 1891. Eupachycrinus tumulosus. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 70, pl. 9, figs. 9, 10.
  - Kaskaskia Group: Breckinridge County, Kentucky.
- 1892. Eupachycrinus tumulosus. Miller, 17th Rep. Geol. Surv. Ind., p. 680, pl. 9, figs. 9, 10.

Kaskaskia Group: Breckinridge County, Kentucky.

## Eupachycrinus verrucosus White and St. John.

1868. Hydreionocrinus? rerrucosus. White and St. John, Trans. Chicago Acad. Sci., vol. 1, p. 117, fig. 1.

Upper Coal Measures: Western Iowa.

## Eupachycrinus verrucosus White and St. John—Continued.

- 1872. Eupachycrinus verrucosus. Meek, U. S. Geol. Surv. Nebr., p. 150, figs. 3, 4. Upper Coal Measures: Plattsmouth, Nebraska.
- 1894. Eupachycrinus verrucosus. Keyes, Mo. Geol. Surv., vol. 4, p. 217, pl. 27, fig. 2. Upper Coal Measures: Kansas City, Missouri.

#### Eupachycrinus (species undetermined).

1888. Eupachycrinus (sp. ?). Keyes, Proc. Acad. Nat. Sci. Phil., p. 225.
Lower Coal Measures: Des Moines, Iowa.

## EUPHOBERIA Meek and Worthen, 1868.

#### Euphoberia anguilla Scudder.

1882. Euphoberia anguilla. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 177, pl. 12, fig. 20.

Carboniferous: Mazon Creek, Illinois.

1890. Euphoberia anguilla. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, pp. 436, pl. 36, fig. 3.

Carboniferous: Mazon Creek, Illinois.

1890. Euphoberia anguilla. Scudder, Foss. Insc. N. A., vol. 1, pp. 229, 411, pl. 9, fig. 20; pl. 28, fig. 3.

Carboniferous: Mazon Creek, Illinois.

## Euphoberia armigera Meek and Worthen.

1868. Euphoberia armigera. Meek and Worthen, Am. Jour. Sci. (2), vol. 46, p. 26. Coal Measures: Mazon Creek, Grundy County, Illinois.

1868. Euphoberia armigera. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 556, figs. A-D.

Coal Measures: Mazon Creek, Grundy County, Illinois.

1882. Euphoberia armigera. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 160, pl. 12, figs. 1-3, 5, 6, 13; pl. 13, figs. 7, 8, 10.

Carboniferous: Mazon Creek, Illinois.

1890. Euphoberia armigera. Scuddor, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 427, pl. 34, figs. 2, 4, 8; pl. 35, fig. 3.

Carboniferous: Mazon Creek, Illinois.

1890. Euphoberia armigera. Scudder, Foss. Insc. N. A., vol. 1, pp. 212, 403, pl. 9, figs. 1-3, 5, 6, 13; pl. 10, figs. 7, 8, 10; pl. 26, figs. 2, 4, 8; pl. 27, fig. 3.
 Carboniferous: Mazon Creek, Illinois.

## Euphoberia carri Scudder.

- 1882. Euphoberia carri. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 171, pl. 12, figs. 4, 9-12, 14-19; pl. 13, figs. 16-18.
  Carboniferous: Mazon Creek, Illinois.
- 1890. Euphoberia carri. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, pp. 429.

  Carboniferous: Mazon Creek, Illinois.
- 1890. Euphoberia carri. Scudder, Foss. Insc. N. A., vol. 1, pp. 223, 405, pl. 9, figs. 4, 9-12, 14-19; pl. 10, figs. 10, 18.
   Carboniferous: Mazon Creek, Illinois.

## Euphoberia cuspidata Scudder.

1890. Euphoberia cuspidata. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, pp. 429, pl. 34, figs. 3, 7.

Carboniferous: Mazon Creek, Illinois.

1890. Euphoberia cuspidata. Scudder, Foss. Insc. N. A., vol. 1, pp. 405, pl. 26, figs. 3, 7.

Carboniferous: Mazon Creek, Illinois.

## Euphoberia flabellata Scudder.

1882. Euphoberia flabellata. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 174, pl. 13, fig. 15.

Carboniferous: Mazon Creek, Illinois.

1890. Euphoberia flabellata. Scudder, Foss. Insc. N. A., vol. 1, pp. 226, pl. 10, fig. 15.

Carboniferous: Mazon Creek, Illinois.

## Euphoberia granosa Scudder.

1882. Euphoberia granosa. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 168, pl. 12, figs. 22, 24-26, pl. 13, fig. 13.

Carboniferous: Mazon Creek, Illinois.

1890. Euphoberia granosa. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 427, pl. 34, figs. 5, 6; pl. 36, fig. 2.

Carboniferous: Mazon Creek, Illinois.

1890. Euphoberia granosa. Scudder, Foss. Insc. N. A., vol. 1, pp. 220, 403, pl. 9, figs. 22, 24-26; pl. 10, fig. 13; pl. 26, figs. 5, 6; pl. 28, fig. 2.

Carboniferous: Mazon Creek, Illinois.

## Euphoberia horrida Scudder.

1882. Euphoberia horrida. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 158, pl. 13, figs. 11, 12, 14.

Carboniferous: Mazon Creek, Illinois.

1890. Euphoberia horrida. Scudder, Foss. Insc. N. A., vol. 1, pp. 210, pl. 10, figs. 11, 12, 14.

Carboniferous: Mazon Creek, Illinois.

#### Euphoberia hystricosa Scudder.

1890. Euphoberia hystricosa. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 426, pl. 33, figs. 1-3.

Carboniferous: Mazon Creek, Illinois.

1890. Euphoberia hystricosa. Scudder, Foss. Insc. N. A., vol. 1, p. 402, pl. 25, figs. 1, 3.

Carboniferous: Mazon Creek, Illinois.

## Euphoberia major Meek and Worthen. See Acantherpestes major.

## Euphoberia simplex Scudder.

1890. Euphoberia simplex. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, pp. 432, pl. 35, figs. 2, 6, 7.

Carboniferous: Mazon Creek, Illinois.

1890. Euphoberia simplex. Scudder, Foss. Insc. N. A., vol. 1, pp. 408, pl. 27, figs. 2, 6, 7.

Carboniterous: Mazon Creek, Illinois.

## Euphoberia spinulosa Scudder.

1890. Euphoberia spinulosa. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, pp. 430, pl. 34, fig. 1; pl. 35, figs. 1, 4, 5; pl. 36, figs. 7, 8.

Carboniferous: Mazon Creek and Braidwood, Illinois.

1890. Euphoberia spinulosa. Scudder, Foss. Insc. N. A., vol. 1, pp. 406, pl. 26, fig. 1; pl. 27, figs, 1, 4, 5; pl. 28, figs. 7, 8.

Carboniferous: Mazon Creek and Braidwood, Illinois.

#### Euphoberia tracta Scudder.

1890. Euphoberia tracta. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, pp. 433, pl. 36, figs. 1, 4-6.

Carboniferous: Mazon Creek, Illinois.

1890. Euphoberia tracta. Scudder, Foss. Insc. N. A., vol. 1, pp. 409, pl. 28, figs. 1, 4-6.

Carboniferous: Mazon Creek, Illinois.

## Euphoberia (species undetermined).

1890. Euphoberia sp. Scudder, Mem. Bost. Soc. Nat. Hist., p. 435.

Carboniferous: Mazon Creek, Illinois.

1890. Euphoberia sp. Scudder, Foss. Insc. N. A., vol. 1, p. 411.

Carboniferous: Mazon Creek, Illinois.

## (EUPROOPS Meek, 1867.)

Euproops colletti White. See Prestwichia colletti.

Euproops dana Meek and Worthen. See Prestwichia dana.

Euproops longispina Packard. See Prestwichia longispina.

## EURYPTERUS De Kay, 1825.

#### Eurypterus mansfieldi Hall.

1877. Dolichopterus Mansfieldi. Hall, Proc. Am. Phil. Soc., vol. 16, p. 621. Carboniferous; Near Cannelton, Beaver County, Pennsylvania.

1888. Europterus Mansfieldi. Hall, 2d Geol. Surv. Ponn., Rep. PPP, p. 32, pl. 4. figs. 1-8; pl. 5, figs. 1-11; pl. 6, fig. 1; pl. 7, fig. 1; pl. 8, figs. 1-3. Carboniferous: Near Cannelton, Beaver County, Pennsylvania.

## Eurypterus mazonensis Meek and Worthen.

1868. Eurypterus (Anthraconectes) Mazonensis. Meek and Worthen, Am. Jour. Sci. (2), vol. 46, p. 21.

Coal Measures: Mazon Creek, Grundy County, Illinois.

1868. Eurypterus (Anthraconectes) Mazonensis. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 544, fig.

Coal Measures: Mazon Creek, Grundy County, Illinois.

1884. Eurypterus (Anthraconectes) Mazonensis. White, 13th Rep. Geol. Surv. Ind., p. 168, pl. 37, figs. 1-3. Coal Measures: Mazon Creek, Grundy County, Illinois.

1884. Eurypterus (Anthraconectes) Mazonensis. Hall, 2d Geol. Surv. Penn., Rep. PPP, pp. 25-27, figs. 2, 3, Coal Measures: Mazon Creek, Grundy County, Illinois.

#### Eurypterus pennsylvanicus Hall.

1877. Eurypterus Pennsylvanicus. Hall, Proc. Am. Phil. Soc., vol. 16, p. 621. Carboniferous: Rooker Farm, Venango County, Pennsylvania.

1884. Eurypterus Pennsylvanicus. Hall, 2d Geol. Surv. Penn., Rep. PPP, p. 31, pl. 5, fig. 18.

Carboniferous: Rooker Farm, Pithole City, Venango County, Pennsylvania.

## Eurypterus potens Hall.

1884. Eurypterus potens. Hall, 2d Geol. Surv. Penn., Rep. PPP, pl. 4, figs. 9, 10. Carboniferous: Pennsylvania.

#### Eurypterus stylus Hall.

1884. Eurypterus stylus. Hall, 2d Geol. Surv. Penn., Rep. PPP, p. 34, pl. 5, figs.

Carboniferous: Near Cannelton, Beaver County, Pennsylvania.

## Eurypterus (species undetermined).

1863. Eurypterus (†) tail of. Salter, Quart. Jour. Geol. Soc. Lond., vol. 19, p. 78, fig. 4, p. 79.

Coal Measures: Joggins, Nova Scotia.

1863. Eurypterus; a large species allied to E. Scoeleri, Hibbert. Salter, Quart. Jour. Geol. Soc. Lond., vol. 19, p. 78, fig. 5, p. 79. Coal Measures: Port Hood, Cape Breton.

## EUTROCHOCRINUS Wachsmuth and Springer, 1897.

## Eutrochocrinus christyi Shumard.

- 1848. Actinocrinites. Christy, Letters on Geol., pl. 1, figs. 1-2. Carboniferous Limestone: Oquawka, Illinois.
- 1855. Actinocrinus Christyi. Shumard, Geol. Rept. Mo., p. 191, pl. A, fig. 3. Encrinital L. S: Rocheport, Boone County, and near Palmyra, Marion County, Missouri.
- 1873. Batocrinus christyi. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 379, pl. 5, fig. 4.
- 1893. Batocrinus bisbrachiatus. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 13, pl. 2, figs. 4, 5.

Burlington L. S: Burlington, Iowa.

- 1894. Batocrinus altiusculus. Miller and Gurley, Bull. No. 3, Ill., State Mus. Nat. Hist., p. 20, pl. 5, figs. 1-3.
  - Upper Burlington Group: Near Blackwater Station, west of Boonville, Missouri.
- 1894. Batocrinus christyi. Keyes, Mo. Geol. Surv., vol. 4, p. 181.
  Upper Burlington L. S.: Ash Grove, Rocheport, Louisiana, and Palmyra,
  Missouri.
- 1897. Eutocrinus christyi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 409, pl. 29. fig. 6, pl. 32, figs. 1a-c.

# Upper Burlington L. S.: Burlington, Iowa; Illinois; Missouri.

## Eutrochocrinus christyi var. trochiscus Meek and Worthen.

- 1868. Batocrinus trochiscus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 354. Upper Burlington L. S.: Burlington, Iowa.
- 1873. Batocrinus trochiscus. Meek and Worthen, Geol. Surv. III., vol. 5, p. 372, pl. 5, fig. 6.

Burlington L. S.: Burlington, Iowa.

- 1894. Batocrinus trohiscus. Keyes, Mo. Geol. Surv., vol. 4, p. 181, pl. 23, fig. 5. Burlington L. S.: Sedalia, Missouri.
- 1897. Eutrochocrinus Christyi var. trochiscus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 410, pl. 32, fig. 3.
  - Burlington and Keokuk transition bed: Des Moines County, Iowa; Nauvoo, Illin

## Eutrochocrinus lovei Wachsmuth and Springer.

1881. Batoorinus Lovei. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil., p. 342. (Rev. Palæocr. II. p. 168.)

Upper Burlington L. S.: Burlington, Iowa.

- 1897. Eutrochocrinus Lovei. Wachsmuth and Springer, N. Am. Crin. Cam., p. 412, pl. 29, fig. 7, pl. 32, figs. 2a, b.
  - Upper Burlington L. S.: Burlington, Iowa.

## Eutrochocrinus planodiscus Hall.

- 1860. Actinocrinus planodiscus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 45. Keokuk L. S.: Nauvoo, Illinois.
- 1894. Batocrinus planodiscus. Keyes, Mo. Geol. Surv., vol. 4, p. 184. Keokuk L. S.: Keokuk and Bonaparte, Iowa.
- 1897. Eutrochocrinus planodiscus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 411, pl. 32, figs. 4a, b.

Keokuk Group: Keokuk, Iowa; Nauvoo, Illinois.

## EVACTINOPORA Meek and Worthen, 1865.

## Evactinopora grandis Meek and Worthen.

1868. Eractinopora grandis. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 503, pl. 15, figs. 2a-d.

Burlington Group: Burlington, Iowa.

## Evactinopora grandis Meek and Worthen-Continued.

1890. Eractinopora grandis. Ulrich, Geol. Surv. Ill., vol. 8, p. 511, pl. 73, fig. 4. Burlington L. S.: Burlington, Iowa.

1894. Evactinopora grandis. Keyes, Mo. Geol. Surv., vol. 5, p. 19.
Burlington L. S.: Louisiana and Hannibal, Missouri.

## Evactinopora quinqueradiata Ulrich.

1890. Eractinopora quinqueradiata. Ulrich, Geol. Surv. Ill., vol. 8, p. 510, pl. 73, fig. 1.

Burlington L. S.: Burlington, Iowa; Montezuma, Illinois.

#### Evactinopora radiata Meek and Worthen.

1865. Evactinopora radiata. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 165. Subcarboniferous: Missouri.

1868. Evactinopora radiata. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 502, pl. 17, figs. 2a, b.
Lower Carboniferous L. S: Missouri.

1884. Evactinopora radiata. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 7, p. 42, pl. 2, figs. 1-1c.

1890. Evactinopora radiata. Ulrich, Geol. Surv. Ill., vol. 8, p. 509, pl. 73, figs. 3, 3a. Keokuk Group: Kings Mountain, Kentucky; Missouri.

1894. Eractinopora radiata. Keyes, Mo. Geol. Surv., vol. 5, p. 19. Keokuk L. S.: Missouri.

## Evactinopora sexradiata Meek and Worthen.

1868. Eractinopora sexradiata. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 502, pl. 17, fig. 3.

Lower Carboniferous L. S.: Missouri.

1890. Evactinopora sexradiata. Ulrich, Geol. Surv. Ill., vol. 8, p. 510, pl. 73, figs. 2-2b.

Burlington Group: Burlington, Iowa.

1894. Evactinopora sexradiata. Keyes, Mo. Geol. Surv., vol. 5, p. 18. Burlington L. S.: Louisiana, Missouri; Burlington, Iowa.

## (FAPHRENTIS Hall, 1852.)

Faphrentis multilamella Hall. See Zaphrentis multilamella.

Faphrentis stansburii Hall. See Zaphrentis stansburyi.

## FAVIPHYLLUM Hall, 1852.

## Faviphyllum rugosum Hall.

1852. Faviphyllum? rugosum. Hall, Stansb. Exped. Gt. Salt Lake, p. 407, pl. 1, figs. 1a. b.

Carboniferous: Region of Salt Lake, Utah.

#### FAVOSITES Lamark, 1812.

## Favorites divergens White.

1862. Favorites. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 306. Chemung Group: Burlington, Iowa.

1874. Favosites whitfieldi. White, Prelim. Rep. Inv. Foss., p. 15.

Subcarboniferous: Ewell's Spring, Arizona.

1877. Favosites divergens. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 79, pl. 5, fig. 4.

Subcarboniferous: Ewell's Spring, Arizona.

## Favosites mancus Winchell.

1865. Favosites? mancus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 112.
Geniatite L. S.: Rockford, Indiana.

Favosites whitfieldi. See Favosites divergens.

# Favosites (species undetermined).

1877. Favosites —— (f). Whiteaves, Geol. Surv. Canada, Rep. of Prog. 1875-76, p. 98.

Devonian or Carboniferous: Fossil Point, Peace River, Canada.

# FENESTELLA Lonsdale, 1839.

### Fenestella albida Hall.

1887. Fenestella albida. Hall, 6th Ann. Rep. N. Y. State Geol., p. 48, pl. 7, figs. 1-7. Waverly Group: Richfield, Summit County, Ohio

1888. Fenestella albida. Ulrich, Bull. Den. Univ., vol. 4, p. 65. Waverly Group: Richfield. Ohio.

### Fenestella albida var. richfieldensis Ulrich.

1888. Fenestella albida, var. richfieldensis. Ulrich, Bull. Den. Univ., vol. 4, p. 66, pl. 13, figs. 3-3c.

Waverly Group: Richfield, Ohio.

# Fenestella albida var. Herrick.

1888. Fenestella albida var. † Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 36. Waverly Group: Ohio.

### Fenestella aperta Hall.

1887. Fenestella aperta. Hall, 6th Ann. Rep. N. Y. State Geol., p. 58, pl. 4, figs. 1-5. Waverly Group: Richfield, Summit County, Ohio.

1888. Fenestella aperta. Ulrich, Bull. Den. Univ., vol. 4, p. 66. Cuyahoga Shale: Richfield, Ohio.

### Fenestella arctica Salter.

1855. Fenestella arctica. Salter, Belcher's "Last of the Arctic Voyages," p. 385, pl. 36, fig. 8.

Carboniferous: Depot Point.

1878. Fenestella t arctica. Etheridge, Quart. Jour. Geol. Soc. Lond., vol. 34, p. 618. Carboniferous L. S.: Depot Point, Albert Land, and Feilden Isthmus, latitude 82° 43'.

# Fenestella banyana Prout.

1859. Fenestella banyana. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 450, pl. 18, figs. 4-4b.

Second Archimedes L. S.: Barrett's Station, St. Louis County, Missouri

1894. Fenestella banyana. Keyes, Mo. Geol, Surv., vol. 5, p. 23
St. Louis L. S.: Barrett Station, Missouri.

### Fenestella burlingtonensis Ulrich.

1888. Fenestella burlingtonensis. Ulrich, Bull. Den. Univ., vol. 4, p. 71.
Waverly Group: Lodi, Ohio.

1890. Fenestella burlingtonensis. Ulrich, Geol. Surv. Ill., vol. 8, p. 536, pl. 49, figs. 1, 1a.

Burlington L. S.: Burlington, Iowa.

### Fenestella cavernosa Ulrich.

1888. Fenestella carernosa. Ulrich, Bull. Den. Univ., vol. 4, p. 69, pl. 13, figs. 7-7b. Waverly Group: Sciotoville, Ohio.

### Fenestella cestriensis Ulrich.

1890. Fenestella cestriensis. Ulrich, Geol. Surv. Ill., vol. 8, p. 547, pl. 51, figs. 5-5b. Chester Group: Chester, Kaskaskia and near Anna, Illinois; Sloan's Valley and Litchfield, Kentucky.

1894. Fencetella cestriensis. Keyes, Mo. Geol. Surv., vol. 5, p. 24. Kaskaskia L. S.: Chester, Illinois.

### Fenestella cingulata Ulrich.

1890. Fenestella cingulata. Ulrich, Geol. Surv. Ill., vol. 8, p. 543, pl. 52, figs. 1-1d. Keokuk Group: Nauvoo, Illinois; Keokuk, Iowa.

1894. Fenestella cingulata. Keyes, Mo. Geol. Surv., vol. 5, p. 23. Kookuk L. S.: Keokuk, Iowa.

# Fenestella compressa Ulrich.

1890. Fenestella compressa. Ulrich, Geol. Surv. Ill., vol. 8, p. 539, pl. 50, fig. 2a. Keokuk Group: King's Mountain Tunnel, Kentucky. Chester Group: Sloan's Valley, Kentucky.

# Fenestella compressa var. nododorsalis Ulrich.

1890. Fenestella compressa var. nododorsalis. Ulrich, Geol. Surv. Ill., vol. 8, p. 540, pl. 50, fig. 2.
Keokuk Group: King's Mountain Tunnel, Kentucky.

# Fenestella conradi Ulrich.

1890. Fonestella conradi. Ulrich, Geol. Surv. Ill., vol. 8, p. 553, pl. 52, figs. 8, 8a.

Upper Coal Measures: 7 miles north of Red Oak, Iowa.

### Fenestella corticata Prout.

1858. Fenestella corticata. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 230. Carboniferous L. S.: Organ Mountains, New Mexico.

#### Fenestella delicata Meek.

1871. Fenestella delicata. Meek, Proc. Acad. Nat. Sci. Phil., p. 159. Waverly Group: Lodi, Ohio.

1875. Fenestella delicata. Meek, Pal. Ohio, vol. 2, p. 273, pl. 10, figs. 2a-d. Waverly Group: Lodi, Ohio.

#### Fenestella delicatula Ulrich.

1890. Fenestella delicatula. Ulrich, Geol. Surv. Ill., vol. 8, p. 549, pl. 52, fig. 2. Base of Coal Measures: Seville, Illinois.

#### Fenestella elevatipora Ulrich.

1890. Fenestella elevatipora. Ulrich, Geol. Surv. Ill., vol. 8, p. 549, pl. 51, figs. 3, 3a. Chester Group: Crittenden County, Kentucky; Chester, Illinois.

1894. Fenestella elevatipora. Keyes, Mo. Geol. Surv., vol. 5, p. 25. Kaskaskia L. S.: Chester, Illinois.

#### Fenestella exigua Ulrich.

1890. Fonestella exigua. Ulrich, Geol. Surv. Ill., vol. 8, p. 545, pl. 51, figs. 1, 1a. Warsaw beds: Monroe County, Illinois.

#### Fenestella filistriata Ulrich.

1890. Fonestella filistriata. Ulrich, Geol. Surv. Ill., vol. 8, p. 535, pl. 49, figs. 2, 2a. Burlington L. S.: Burlington, Iowa; Montezuma, Illinois.

1894. Fenestella filistriata. Keyes, Mo. Geol. Surv., vol. 5, p. 22. Burlington L. S.: Montezuma, Illinois.

### Fenestella flexuosa Ulrich.

1890. Fenestella flexuosa. Ulrich, Geol. Surv. Ill., vol. 8. p. 548, pl. 51, figs. 4-4c. Chester Group: Sloan's Valley, Kentucky; Chester, Illinois.

1894. Fenestella flexuosa. Keyes, Mo. Geol. Surv., vol. 5, p. 24. Kaskaskia L. S.: Chester, Illinois.

#### Fenestella foliata Ulrich.

1888. Fenestella foliata. Ulrich, Bull. Den. Univ., vol. 4, p. 67, pl. 13, figs. 4-4c. Waverly Group: Cuyahoga Valley below second falls.

#### Fenestella funicula Ulrich.

1890. Fenestella funicula. Ulrich, Geol. Surv. Ill., vol. 8, p. 542, pl. 51, fig. 6. Keokuk Group; Keokuk, Iowa.

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# Fenestella funicula Ulrich-Continued.

1894. Fenestella funicula. Keyes, Mo. Geol. Surv., vol. 5, p. 23. Keokuk L. S.: Keokuk, Iowa.

Fenestella hemitrypa. See Hemitrypa hemitrypa.

### Fenestella herrickana Ulrich.

1888. Fenestella herrickana. Ulrich, Bull. Den. Univ., vol. 4, p. 63, pl. 13, figs. 2-2d. Waverly Group: Moot's Run, Licking County, and Richfield, Ohio.

# Fenestella inæqualis Ulrich.

1890. Fenestella inæqualis. Ulrich, Geol. Surv. Ill., vol. 8, p. 554, pl. 52, figs. 9, 9a. Upper Coal Measures: Ball's Mill, Sangamon County, Illinois.

# Fenestella intermedia Prout.

1858. Fenestella intermedia. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 231. Carboniferous L. S.: Organ Mountains, New Mexico.

Fenestella laxa. See Archimedes laxa.

# Fenestella limbata Foerste.

1887. Fenestella limbatus. Foerste, Bull. Den. Univ., vol. 2, pp. 83, 87, pl. 7, figs. 10a-d.

Coal Measures: Flint Ridge and Bald Hill, Ohio.

Fenestella limbata var. remota Foerste. See Fenestella remota.

# Fenestella limitaris Ulrich.

1890. Fenestella limitaris. Ulrich, Geol. Surv. Ill., vol. 8, p. 538, pl. 49, figs. 4, 4a. Keokuk Group: Bentonsport and Keokuk, Iowa.

1894. Fenestella limitaris. Keys, Mo. Geol. Surv., vol. 5, p. 23. Keokuk L. S.: Keokuk, Iowa.

#### Fenestella lyelli Dawson.

1868. Fenestella Lyelli. Dawson, Acad. Geol., p. 288, figs. 86a-c. Carboniferous L. S.: Stewiacke, Nova Scotia.

Fenestella lyri. See Lyropora lyri.

Fenestella meekana. See Archimedes meekana.

#### Fenestella meekana Ulrich.

1888. Fenestella meekana. Ulrich, Bull. Den. Univ., vol. 4, p. 64, pl. 13, figs. 1-1b. Waverly Group: Richfield, Ohio; ? Lodi, Ohio.

# Fenestella mimica Ulrich.

1890. Fenestella mimica. Ulrich, Geol. Surv. Ill., vol. 8, p. 552, pl. 52, figs. 7, 7a. Coal Measures: Seville, Illinois.

### Fenestella modesta Ulrich.

1890. Fenestella modesta. Ulrich, Geol. Surv. Ill., vol. 8, p. 550, pl. 52, figs. 3-3b. Coal Measures: Knox County and Seville, Illinois.

### Fenestella multiporata var. lodiensis Meek.

1875. Fenestella multiporata? var. Lodiensis. Meek, Pal. Ohio, vol. 2, p. 274, pl. 10, figs. 1a-c.

Waverly Group: Lodi, Ohio.

# Fenestella multispinosa Ulrich.

1890. Fenestella multispinosa. Ulrich, Geol. Surv. Ill., vol. 8, p. 540, pl. 50, figs. 3-3e.

Keokuk Group: Bentonsport and Keokuk, Iowa; King's Mountain, Kentucky.

1894. Fenestella maltispinosa. Keyes, Mo. Geol. Surv., vol. 5, p. 23. Keokuk L. S.: Keokuk, Iowa.

#### Fenestella norwoodana Prout.

1858. Fenestella Norwoodiana. Prout, Trars. St. Louis Acad. Sci., vol. 1, p. 233. Carboniferous L. S.: Organ Mountains, New Mexico.

Fenestella owenana. See Archimedes owenana.

# Fenestella perminuta Ulrich.

1890. Fenestella perminuta. Ulrich, Geol. Surv. Ill., vol. 8, p. 551, pl. 52, figs. 4-4b. Coal Measures: Seville, Illinois.

Fenestella plumosa. See Hemitrypa plumosa.

# Fenestella popeana Prout.

1858. Fonestella Popeana. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 229. White Permian L. S.: Guadalupe Mountains, New Mexico.

1859. Fenestella Popeana. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 388. White and Dark Permian L. S.: Guadalupe Mountains.

Fenestella quincuncialis. See Lyropora quincuncialis.

### Fenestella regalis Ulrich.

1888. Fenestella regalis. Ulrich, Bull. Den. Univ., vol. 4, p. 70, pl. 13, figs. 5, 5a. Cuyahoga Shale: Richland and Lodi, Ohio.

Keokuk Group: King's Mountain, Kentucky.

1890. Fenestella regalis. Ulrich, Geol. Surv. Ill., vol. 8, p. 538, pl. 50, figs. 1, 1a; pl. 54, fig. 5.

Keokuk Group: King's Mountain Tunnel, Kentucky, Cincinnati Southern Railroad.

### Fenestella remota Foerste.

1887. Fenestella limbatus var. remotus. Foerste, Bull. Den. Univ., vol. 2, p. 84. Coal Measures: Flint Ridge and Bald Hill, Ohio.

1887. Fenestella remota. Foerste, Bull. Den. Univ., vol. 2, p. 87, pl. 7, fig. 5.

Fenestella retrorsa. See Lyropora retrorsa.

# Fenestella rudis Ulrich.

1890. Fenestella rudis. Ulrich, Geol. Surv. Ill., vol. 8, p. 537, pl. 49, figs. 3-3d. Keokuk L. S.: Keokuk and Bentonsport, Iowa; Warsaw and Nauvoo, Illinois.

Warsaw beds: Warsaw, Illinois.

1894. Fenestella rudis. Keyes, Mo. Geol. Surv., vol. 5, p. 23, pl. 34, fig. 5. Keokuk L. S.: St. Francisville, Missouri.

### Fenestella serratula Ulrich.

1890. Fenestella serratula. Ulrich, Geol. Surv. Ill., vol. 8, p. 544, pl. 50, figs. 5-5c. Keokuk Group: Nauvoo, Illinois.

Warsaw beds: Monroe County and Warsaw, Illinois.

St. Louis L. S.: Caldwell, Lyon, and Crittenden counties, Kentucky. Chester Group: Sloan's Valley, Kentucky.

1894. Fenestella serratula. Keyes, Mo. Geol. Surv., vol. 5, p. 23. Keokuk L. S.: Keokuk, Iowa.

# Fenestella sevillensis Ulrich.

1890. Fenestella sevillensis. Ulrich, Geol. Surv. Ill., vol. 8, p. 552, pl. 52, figs. 6, 6a. Base of Coal Measures: Seville, Illinois.

#### Fenestella shumardi Prout.

1858. Fenestella Shumardi. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 232. Carboniferous L. S.: Organ Mountains, New Mexico.

1872. Fenestella Shumardi Meek, U. S. Geol. Surv. Nebr., p. 153, pl. 7, figs. 3a-c. Upper Coal Measures: Nebraska City, Nebraska. Lower Coal Measures: Ohio.

# Fenestella shumardi Prout-Continued,

1894. Fenestella shumardi. Keyes, Mo. Geol. Surv., vol. 5, p. 24, pl. 34, figs. 2a, b. Upper Coal Measures: Kansas City. Missouri.

1897. Fenestella shumardi. Smith, Proc. Am. Phil. Soc., vol. 35, p. 27. Upper Coal Measures: Poteau Mountain, Indian Territory.

# Fenestella subflexuosa Ulrich.

1888. Fenestella subflexuosa. Ulrich, Bull. Den. Univ., vol. 4, p. 68, pl. 13, fig. 6. Cuyahoga Shale: Cuyahoga Falls, Ohio.

Fenestella subquadrans. See Lyropora subquadrans.

Fenestella swallovana. See Archimedes swallovana.

### Fenestella subretiformis Prout.

1858. Fenestella subretiformis. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 233. Carboniferous L. S.: Organ Mountains, New Mexico.

### Fenestella tenax Ulrich.

1888. Fenestella tenax. Ulrich, Bull. Den. Univ., vol. 4, p. 71. Waverly Group: Cuyahoga County, Ohio.

1890. Fenestella tenax. Ulrich, Geol. Surv. III., vol. 8, p. 546, pl. 51, figs. 2-2e. Warsaw beds: Monroe County and Warsaw, Illinois.

Chester Group: Chester and Kaskaskia, Ill.; Sloan's Valley, Kentucky.

1894. Fenestella tenax. Keyes, Mo. Geol. Surv., vol. 5, p. 24. Kaskaskia L. S.: Chester, Illinois.

### Fenestella triserialis Ulrich.

1890. Fenestella triscrialis. Ulrich, Geol. Surv. Ill., vol. 8, p. 541, pl. 50, figs. 4, 4a. Keokuk Group: King's Mountain, Kentucky.

#### Fenestella trituberculata Prout.

1858. Fenestella trituberculata. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 228. Carboniferous L. S.: Organ Mountains, New Mexico.

#### Fenestella variabilis Prout.

· 1858. Fenestella variabilis. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 231. †Carboniferous: Texas or New Mexico.

Fenestella wortheni. See Archimedes wortheni.

#### Fenestella wortheni Ulrich.

1890. Fenestella wortheni. Ulrich, Geol. Surv. Ill., vol. 8, p. 551,pl. 52, figs 5, 5a. Base of Coal Measures: Seville, Illinois.

# Fenestella (species undetermined).

1858. Fenestella. Schiel, Pac. R. R. Rept., vol. 2, p. 108, pl. 1, fig. 1. Carboniferous L. S.: Willow Creek.

1868. Fenestella. Dawson, Acad. Geol., p. 289.

Carboniferous L. S.: West River, Pictou, Nova Scotia.

1868. Fenestella. Dawson, Acad. Geol., p. 289.

Carboniferous L. S.: Stewiacke, Nova Scotia.

1872. Fenestella sp. Meek, U. S. Geol. Surv. Nebr., p. 152, pl. 1, figs. 4a, b. Upper Coal Measures: Bellevue and Plattsmouth, Nebraska.

1876. Fenestella — ? —... White, Powell's Rep. Geol. Uinta Mts., p. 89. Lower Aubrey Group: Near Echo Park, Utah.

1878. Fenestella sp. Etheridge, Quart. Jour. Geol. Soc. Lond., vol. 34, pp. 619, 620. Carboniferous: Feilden Isthmus, latitude 82° 43'.

# FENESTRALIA Prout, 1858.

#### Fenestralia sancti-Indovici Prout.

1858. Fenestralia St. Ludovici. Prout, Trans. St. Louis Acad. Sci., vol. 1 p. 235. Upper St. Louis L. S.: St. Louis, Missouri.

#### Fenestralia sancti-ludovici Prout—Continued.

- 1859. Fenestralia St. Ludovici. Prout, Trans. St. Louis Acad. Sci., vol. 1, pl. 15, figs. 1, 1a.
- 1890. Fonestralia sancti-ludovici. Ulrich, Geol. Surv. Ill., vol. 8, p. 604, pl. 55, fig. 5.
  - St. Louis Group and Warsaw beds: St. Louis and Barrett's Station, Missouri; Monroe County, Alton, Columbia, and Warsaw, Illinois.
- 1894. Fenestraliat sancti-ludovici. Keyes, Mo. Geol. Surv., vol. 5, p. 30. St. Louis L. S.: St. Louis, Missouri.

### Fenestralia sancti-ludovici var. compacta Ulrich.

1890. Fenestralia sancti-ludovici var. compacta. Ulrich, Geol. Surv. Ill., vol. 8, p. 605, pl. 59, fig. 1.

St. Louis Group: Elizabethtown, Kentucky.

# FILICITES Schlotheim, 1820.

# Filicites gracilis Shumard.

1855. Filicites gracilis. Shumard, Geol. Rep. Mo., p. 208, pl. A, fig. 11. Lithographic L. S.: Louisiana and Elk Spring, Pike County; on North River, Marion County, Missouri.

# FISTULIPORA McCoy, 1849.

# Fistulipora carbonaria Ulrich.

1884. Fistulipora carbonaria. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 7, p. 45, pl. 3, figs. 1, 1a.

Upper Coal Measures: Kansas City, Missouri.

1894. Fistulipora carbonaria. Keyes, Mo. Geol. Surv., vol. 5, p. 16. Upper Coal Measures: Kansas City, Missouri.

# Fistulipora clausa. See Meekopora clausa.

# Fistulipora compressa Rominger.

1866. Fistulipora compressa. Rominger, Proc. Acad. Nat. Sci. Phil., p. 123. Keokuk L. S.: Lagrange, Missouri.

1894. Fistulipora compressa. Keyes, Mo. Geol. Surv., vol. 5, p. 16. Keokuk L. S.: Lagrange and Wayland, Missouri.

# Fistulipora excelens Ulrich.

1884. Fistulipora excelens. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 7, p. 46, pl. 3, figs. 3-3b.

Kaskaskia Group: Tateville and Litchfield, Kentucky.

### Fistulipora flabellum. See Dichotrypa flabellum.

### Fistulipora nodulifera Meek.

1866. Stenopora columnaris (pars). Geintz, Carb. und Dyas in Nebr., p. 66. (Not Schloth., 1813.)

Carboniferous: Bellevue, Nebraska.

1872. Fistulipora nodulifera. Meek, U. S. Geol. Surv. Nebr., p. 143, pl. 5, figs. 5a-d. Upper Coal Measures: Nebraska City, Bennett's Mill, and Wyoming, Nebraska.

Coal Measures: Iowa and Illinois.

1894. Fistulipora nodulifera. Keyes, Mo. Geol. Surv., vol. 5, pl. 34, fig. 3. Upper Coal Measures.

1897. Fistulipora nodulifera. Smith, Proc. Am. Phil. Soc., vol. 35, p. 25.
Upper Coal Measures: Poteau Mountain, Indian Territory.

# Fistulipora prolifica Ulrich.

1884. Fistulipora prolifica. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 7, p. 45, pl. 3, figs. 2, 2a.

St. Louis Group: Colesburg, Kentucky.

Fistulipora peculiaris. See Actinotrypa peculiaris.

Fistulipora spergenensis Rominger.

1866. Fistulipora Spergenensis. Rominger, Proc. Acad. Nat. Sci. Phil., p. 12 2. Warsaw L. S.: Spergen Hill, Indiana.

Fistulipora trifolia. See Prismopora trifolia.

Fistulipora (species undetermined.)

1876. Fistulipora --- ! ---. White, Powell's Geol. Rep. Uinta Mts., p. 88. Lower Aubrey Group: Confluence of Grand and Green rivers, Utah.

1888. Fistulipora (3) sp. undet. Ulrich, Bull. Den. Univ., vol. 4, p. 92. Waverly Group: Sciotoville and Richfield, Ohio.

# (FLEMINGIA De Koninck, 1881.)

Flemingia stultus. See Pleurotomaria stulta.

(FLUSTRA Linnæus, 1745.)

Flustra spatulata Prout. See Worthenopora spatulata.

Flustra tuberculata Prout. See Stenopora tuberculata.

# FORBESIOCRINUS De Koninck and Lehon, 1854.

### Forbesiocrinus agassizi Hall.

1858. Forbesiocrinus agassizi. Hall, Geol. Iowa, vol. 1, pt. 2, p. 631, fig. 103. 1860. Forbesiocrinus agassizi. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 65. Burlington L. S.: Burlington, Iowa.

1861. Forbesiocrinus Agassizi var. giganteus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 131.

Burlington L. S.: Burlington, Iowa.

1868. Forbesiocrinus Agassizi var. giganteus. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 495, pl. 18, fig. 3.

Burlington Group: Burlington, Iowa.

1872. Forbesiocrinus Agassizi. Hall, Photo. Plates of Crinoids, pl. 7, figs. 1, 2.

1894. Forbesiocrinus agassizi. Keyes, Mo. Geol. Surv., vol. 4, p. 224, pl. 30, fig. 3.

Forbesiocrinus agassizi var. giganteus. See Forbesiocrinus agassizi.

Forbesiocrinus asteriæformis. See Onychocrinus asteriæformis.

Forbesiocrinus cestriensis Hall.

1860. Forbesiocrinus cestriensis. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 68. Kaskaskia L. S.: Pope County, Illinois.

Forbesiocrinus communis. See Taxocrinus communis.

# Forbesiocrinus elegantulus Miller.

1891. Forbesocrinus elegantulus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 40, pl. 5. figs. 14, 15.

Keokuk Group: Boonville, Missouri.

Forbesiocrinus giddingei. See Taxocrinus giddingei.

### Forbesiocrinus greenei Miller and Gurley.

1896. Forbesocrinus greenei. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 57, pl. 4, figs. 1, 2.

Keokuk Group: Edwardsville, Indiana.

Forbesiocrinus jerseyensis Miller and Gurley.

1896. Forbesiocrinus jerseyensis. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 58, pl. 4, figs. 2, 3.

Warsaw Group: Jersey County, Illinois.

Forbesiocrinus juvenis. See Taxocrinus juvenis.

Forbesiocrinus kelloggi. See Taxocrinus kelloggi.

Forbesiocrinus lobatus var. tardus. See Taxocrinus tardus.

Forbesiocrinus macadamsi Miller and Gurley.

1896. Forbesiocrinus macadamsi. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 58, pl. 5, figs. 1, 2.

Keokuk Group: Jersey County, Illinois.

Forbesiocrinus meeki. See Taxocrinus meeki.

Forbesiocrinus monroensis. See Onychocrinus monroensis.

Forbesiocrinus multibrachiatus. See Taxocrinus multibrachiatus.

Forbesiocrinus norwoodi. See Onychocrinus exculptus.

Forbesiocrinus parvus Wetherby.

1879. Forbesiocrinus parvus. Wetherby, Jour. Cinn. Soc. Nat. Hist., vol. 2, p. 138, pl. 11, figs. 4a, b.

Kaskaskia Group: Pulaski County, Kentucky.

Forbesiocrinus pratteni. See Melocrinus pratteni.

Forbesiccrinus pyriformis Miller and Gurley.

1894. Forbesiocrinus pyriformis. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 47, pl. 4, fig. 1.

Keokuk Group: Muldrough's Hill, Hardin County, Kentucky.

Forbesiocrinus ramulosus. See Onychocrinus ramulosus and Taxocrinus ramulosus.

Forbesiocrinus saffordi Hall.

1860. Forbesiocrinus saffordi. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 87. Keokuk L. S.: White Creek Springs, Tennessee.

Forbesiocrinus semiovatus. See Taxocrinus semiovatus.

Forbesiocrinus shumardianus. See Taxocrinus shumardianus.

Forbesiocrinus speciosus Miller and Gurley.

1890. Forbestocrinus speciosus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 347, pl. 5, figs. 8, 9.

Keokuk Group: Washington County, Indiana.

Forbesiocrinus spinifer. See Taxocrinus thiemei.

Forbesiocrinus spiniger. See Taxocrinus thiemei.

Forbesiocrinus tardus. See Taxocrinus tardus.

Forbesiocrinus thiemei. See Taxocrinus thiemei.

Forbesiocrinus washingtonensis Miller and Gurley.

1896. Forbesiocrinus washingtonensis. Miller and Gurley, Bull. No. 8, Ill. State
Mus. Nat. Hist., p. 54, pl. 3, figs. 32, 33.

Keokuk Group: Washington County, Indiana.

Forbesiocrinus whitfieldi. See Taxocrinus whitfieldi.

#### Forbesiocrinus wortheni Hall.

1858. Forbesicorinus wortheni. Hall, Geol. Iowa, vol. 1, pt. 2, p. 632, pl. 17, fig. b. Keokuk L. S.: Keokuk, Iowa.

### Forbesiocrinus wortheni Hall-Continued.

1860. Forbesiocrinus wortheni. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., pl. 3, fig. 7.

1873. Forbesiocrinus Wortheni. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 496, pl. 14, fig. 2; pl. 15, fig. 7.

Keokuk Group: Keokuk, Iowa; Hamilton, Illinois; Crawfordsville, Indiana.

1894. Forbesiocrinus wortheni. Keyes, Mo. Geol. Surv., vol. 4, p. 224. Keokuk L. S.: Keokuk and Bonaparte, Iowa.

# FUSULINA Fischer, 1837.

# Fusulina cylindrica Fischer.

\*1837. Fusulina cylindrica. Fischer, Oryct. du Gouv. Moscou, p. 126, pl. 18, figs. 1-5.

1858. Fusulina cylindrica. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 260. Carboniferous: Valley of the Kansas River, Kansas.

1859. Fusulina cylindrica. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 24. Coal Measures: Kansas.

1861. Fusulina cylindrica. Newberry, Ives' Colo. Expl. Exped., p. 129. Coal Measures: Kansas.

1864. Fusulina cylindrica. Meek and Hayden, Pal. Upper Mo., p. 14, pl. 1, figs, 6a-i. Coal Measures: Ohio to Kansas and Southwestern Nebraska, and south to Texas.

1864. Fusulina cylindrica? Meek, Pal. Cal., vol. 1, p. 4, pl. 2, figs. 2, 2a. Carboniferous: Bass's Ranch, Shasta County, California.

1866. Fusulina cylindrica. Geinitz, Carb. und Dyas in Nebr., p. 71, tab. 5, fig. 5. Plattsmouth, Nebraska.

1872. Fusulina cylindrica. Meek, U. S. Geol. Surv. Nebr., p. 140, pl. 1, fig. 2; pl. 2, fig. 1; pl. 5, figs. 3a, b; pl. 7, figs. 8a, b.

Upper Coal Measures: 21 miles west and 1 mile southeast of Nebraska City; Bennett's Mill, Wyoming; Rock Bluff, Plattsmouth, Bellevue, and Omaha City, Nebraska.

1877. Fusulina cylindrica. White, U. S. Geol. Surv. W. 100 Merid., vol. 4, p. 96, pl. 6, figs. 6a, b.

Carboniferous: Wasatch Range, south of Spanish Fork; U-i-ya-bi Pass, Gosute Range; near Beckwith Spring, Cedar Range; near the mouth of Spanish Fork Canyon; southeast of Mount Nebo, all in Utah.

1877. Fusulina Cylindrica. Whiteaves, Geol. Surv. Canada, Rept. of Prog. 1875-76, p. 97.

Carboniferous or Permian: Rear of Fort St. James, Stewart's Lake, British Columbia.

1884. Fusulina cylindrica. White, 13th Rep. Geol. Surv. Ind., p. 116, pl. 23, figs. 1-3. Coal Measures: Ohio to California; Limestone roof of coal K, Lodi, Fountain County, Indiana.

1887. Fusulina cylindrica. Herrick, Bull. Den. Univ., vol. 2, p. 50, pl. 3, fig. 20. Coal Measures: Flint Ridge, Ohio.

1891. Fusulina cylindrica. Keyes, Proc. Acad. Nat. Sci. Phil., p. 245. Lower Coal Measures: Des Moines, Iowa.

1894. Fusulina cylindrica. Keyes, Mo. Geol. Surv., vol. 4, p. 102, pl. 12, figs. 1a-c. Coal Measures: Kansas City and Lexington, Missouri.

#### Fusulina cylindrica var. gracilis Meek.

1864. Fusulina gracilis. Meek, Pal. Cal., vol. 1, p. 4, pl. 2, figs. 1-1c. Carboniferous: Bass's Ranch, Shasta County, California.

1873. Fusulina gracilis? Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 560, pl. 24, fig. 7.

Coal Measures: Springfield, Illinois.

1874. Fusulina gracilis. Meek, Am. Jour. Sci. (3), vol. 7, p. 484.

### Fusulina cylindrica var. robusta Meek.

1864. Fusulina robusta. Meek, Pal. Cal., vol. 1, p. 3, pl. 2, figs. 3-3c. Carboniferous: Base's Ranch, Shasta County, California.

### Fusulina cylindrica var. ventricosa Meek and Hayden.

1858. Fusulina cylindrica var. ventricosa. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 261.

Carboniferous: Juniata and Manhattan, Kansas.

1859. Fueulina cylindrica var. ventricosa. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 24.

Coal Measures: Manhattan and Juniata, Kansas.

1873. Fusulina ventricosa. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 560, pl. 24, fig. 8.

Coal Measures: Fulton and Peoria counties, Illinois.

1874. Fusulina ventricosa. Meek, Am. Jour. Sic. (3), vol. 7, p. 484.

### Fusulina elongata Shumard.

1858. Fusulina elongata. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 297.
Dark and White Permian L. S. and S. S.: Guadalupe Mountains, New Mexico and Texas.

1859. Fusulina elongata. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 388.

White Permian L. S. and underlying S. S.: Guadalupe Mountains, Texas and New Mexico.

### Fusulina hyperborea Salter.

1855. Fueulina Hyperborea. Salter, Belcher's "Last of the Arctic Voyages," p. 380, pl. 36, figs. 1-3.

Carboniferous: Depot Point, Albert Land.

(FUSUS Bruguiere, 1789.)

# Fusus inhabilis. See Sphærodoma primogenia.

### GASTRIOCERAS Hyatt, 1883.

#### Gastrioceras branneri Smith.

1897. Gastrioceras branneri. Smith, Proc. Am. Phil. Soc., vol. 35, p. 47, pl. 23, figs. 1-6.

Lower Coal Measures: Pilot Mountain, Carroll County, Arkansas.

# Gastrioceras compressum Hyatt.

1891. Gastrioceras compressum. Hyatt, 2d Ann. Rep. Geol. Surv. Tex., p. 355, figs. 57-59.

Carboniferous: Colorado River, San Saba County, and near Bend, Texas.

# Gastrioceras entogonum Gabb.

1861. Goniatites entogonus. Gabb, Proc. Acad. Nat. Sci. Phil., p. 372. Carboniferous L. S.: Lampasas County, Texas.

1893. Gastrioceras entogonum? Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 472, pl. 47, figs. 49-51.

Carboniferous: Five miles west of Lampasas, Texas.

# Gastrioceras excelsum Meek.

1876. Goniatites globulosus var. excelsus. Meek, Bull. U. S. G. and G. Surv. Terr., vol. 1, 2d Ser., p. 445.

Coal Measures: Osage, Kansas.

1897. Gastrioceras excelsum. Smith, Proc. Am. Phil. Soc., vol. 35, p. 50, pl. 17, fig. 1.
Lower Coal Measures: Pope County, Arkansas.

# Gastrioceras globulosus Meek and Worthen.

1860. Gontatites globulosus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 471.
Upper Coal Measures: Springfield, Illinois.

1866. Goniatites globulosus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 390, pl. 30, figs. 2a-c.

Upper Coal Measures: Springfield, Illinois; eastern Kansas.

1883. Gastrioceras globulosus. Hyatt, Proc. Bost. Soc. Nat. Hist., vol. 22, p. 327.

1897. Gastrioceras globulosum. Smith, Proc. Am. Phil. Soc., vol. 35, p. 48, pl. 18, figs. 1-6.

Upper Carboniferous: Scott County, Arkansas.

# Gastrioceras kingii Hall and Whitfield.

1877. Goniatites Kingii. Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 279, pl. 6, figs. 9-14.

Coal Measures: Near Eberhardt Mill, White Pine, Nevada.

1883. Gastrioceras Kingii. Hyatt, Proc. Bost. Soc. Nat. Hist., vol. 22, p. 327.

### Gastrioceras marianum de Verneuil.

1845. Goniatites marianus. Verneuil, Geol. Russia and the Ural Mts., vol. 2, p. 369, pl. 27, figs. 2a-c.

Mountain Limestone.

1897. Gastrioceras marianum. Smith, Proc. Am. Phil. Soc., vol. 35, p. 50, pl. 16, figs. 1-5.

Upper Coal Measures: Scott County, Arkansas.

### Gastrioceras (species undetermined).

1897. Gastrioceras sp. indet. Smith, Proc. Am. Phil. Soc., vol. 35, p. 52, pl. 20, fig. 1. Upper Coal Measures: Scott County, Arkansas.

# GENENTOMUM Scudder, 1885.

### Genentomum validum Scudder.

1885. Genentomum validum. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 329, pl. 30, figs. 2, 3.

Carboniferous: Mazon Creok, Illinois.

1890. Genentomum validum. Scudder, Foss. Insc. N. A., vol. 1, p. 293, figs. 2, 3. Carboniferous: Mazon Creek, Illinois.

# GENOPTERYX Scudder, 1884.

#### Genopteryx constricts Scudder.

1885. Genopteryx constricta. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 327, pl. 29, fig. 11.

Carboniferous: Mazon Creek, Illinois.

1890. Genopteryx constricta. Scudder, Foss. Insc. N. A., vol. 1, p. 291, pl. 15, fig. 11. Carboniferous: Mazon Creek, Illinois.

### GERABLATTINA Scudder, 1879.

#### Gerablattina abdicata Scudder.

1895. Gerablattina abdicata. Soudder, Bull. U. S. Geol. Surv. No. 124, p. 118, pl. 10, fig. 6.

Lower Permian: Cassville, West Virginia.

# Gerablattina apicalis Scudder.

1895. Gerablattina apicalis. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 114, pl. 9, fig. 18.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

Gerablattina balteata Scudder. See Etoblattina balteata.

#### Gerablattina cassvici Scudder.

1895. Gerablattina caesvici. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 117, pl. 10, figs. 2, 3.

Lower Permian: Cassville, West Virginia.

#### Gerablattina concinna Scudder.

1895. Gerablattina concinna. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 119, pl. 10, figs. 4. 5.

Lower Permian: Cassville, West Virginia.

#### Gerablattina deducta Scudder.

1895. Gorablattina deducta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 123, pl. 10, fig. 15.

Lower Permian: Cassville, West Virginia.

#### Gerablattina diversinervis Scudder.

1895. Gerablattina diversinervis. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 115, pl. 9, fig. 15.

Lower Permian: Cassville, West Virginia.

#### Gerablattina eversa Scudder.

1895. Gerablattina eversa. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 122, pl. 10, fig. 14.

Lower Permian: Cassville, West Virginia.

#### Gerablattina fascigera Scudder.

1878. Blattina fascigera. Scudder, Proc. Bost. Soc. Nat. Hist., vol. 15, p. 239. Carboniferous: Pittston, Pennsylvania.

1879. Gerablattina fascigera. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 113, pl. 6, figs. 1, 2.

Lower Carboniferous: Pittston, Pennsylvania.

1890. Gerablattina fascigera. Scudder, Foss. Insc. N. A., vol. 1, p. 133, pl. 6, figs. 1, 2.

Lower Carboniferous: Pittston, Pennsylvania.

1895. Gerablattina fascigera. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 128. Millstone Grit: Campbell's Ledge, near Pittston, Pennsylvania.

#### Gerablattina fraterna Scudder.

1893. Gorablattina fraterna. Scudder, Bull. U. S. Gool. Surv. No. 101, p. 19, pl. 2, figs. d, e.

Carboniferous: Silver Spring, East Providence, Rhode Island.

1895. Gerablattina fraterna. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 124, pl. 10, fig. 16.

Lower (f) Coal Measures: Silver Spring, East Providence, Rhode Island.

#### Gerablattina inculta Scudder.

1895. Gerablattina inculta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 113, pl. 9, fig. 16.

Lower Permian: Cassville, West Virginia.

#### Gerablattina lata Scudder.

1895. Gerablattina lata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 125, pl. 11, fig. 2.

Lower Permian: Cassville, West Virginia.

#### Gerablattina minima Scudder.

1895. Gerablattina minima. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 127, pl. 11, fig. 5.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

#### Gerablattina ovata Scudder.

1895. Gerablattina ovata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 126, pl. 11, fig. 4.

Lower Permian: Cassville, West Virginia.

# Gerablattina perita Scudder.

1895. Gerablattina perita. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 114, pl. 9, fig. 17.

Lower Permian: Cassville, West Virginia.

# Gerablattina permacra Scudder.

1895. Gerablattina permaora. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 121, pl. 10, fig. 13.

Lower Permian: Cassville, West Virginia.

# Gerablattina permanenta Scudder.

1895. Gerablattina permanenta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 121, pl. 10, fig. 12.

Lower Permian: Cassville, West Virginia.

#### Gerablattina radiata Scudder.

1895. Gerablattina radiata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 124, pl. 11, fig. 1.

Lower Permian: Cassville, West Virginia.

#### Gerablattina richmondiana Scudder.

1895. Gerablattina richmondiana. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 116, pl. 10, fig. 1.

Lower Coal Measures: Wills Creek; Richmond, Ohio.

#### Gerablattina rotundata Scudder.

1895. Gerablattina rotundata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 126, pl. 11, fig. 3.

Lower Permian: Cassville, West Virginia.

# Gerablattina scapularis Scudder.

1893. Gerablattina scapularis. Scudder, Bull. U. S. Geol. Surv. No. 101, p. 19, pl. 2, fig. l.

Carboniferous: Pawtucket, Rhode Island.

1895. Gerablattina scapularis. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 124, pl. 10, fig. 7.

Lower (†) Coal Measures: Pawtucket, Rhode Island.

#### Gerablattina uniformis Scudder.

1895. Gerablattina uniformis. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 120, pl. 10, figs. 8-11.

Lower Permian: Cassville, West Virginia.

# GERALINURA Scudder, 1884.

### Geralinura carbonaria Scudder.

1884. Geralinura carbonaria. Scudder, Proc. Am. Acad. Arts and Sci., vol. 20, p. 19. Carboniferous: Mazon Creek, Illinois.

1890. Geralinura carbonaria. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 455, pl. 39, figs. 1, 3, 4.

Carboniferous: Mazon Creek, Illinois.

1890. Geralinura carbonaria. Scudder, Foss. Insc. N. A., vol. 1, p. 431, pl. 31, figs. 1, 3, 4.

Carboniferous: Mazon Creek, Illinois.

### GERAPHRYNUS Scudder, 1884.

### Geraphrynus carbonarius Scudder.

1884. Geraphrynus carbonarius. Scudder, Proc. Am. Acad. Arts and Sci., vol. 20, p. 16.

Carboniferous: Mazon Creek, Illinois.

# Geraphrynus carbonarius Scudder—Continued.

1890. Geraphrynus carbonarius. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 446, pl. 40, figs. 1, 9, 10, 12.

Carboniferous: Mazon Creek, Illinois.

1890. Geraphrynus carbonarius. Scudder, Foss. Insc. N. A., vol. 1, p. 422, pl. 32, figs. 1, 9, 10, 12.

Carboniferous: Mazon Creek, Illinois.

### GERAPOMPUS Scudder, 1885.

### Gerapompus blattinoides Scudder.

1885. Gerapompus blattinoides. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 326, pl. 29, fig. 1.

Carboniferous: Mazon Creek, Illinois.

1890. Gerapompus blattinoides. Scudder, Foss. Insc. N. A., vol. 1, p. 290, pl. 15, fig. 1.

Carboniferous: Mazon Creek, Illinois.

### Gerapompus extensus Scudder.

1885. Gerapompus extensus. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 326, pl. 29, figs. 5-8.

Carboniferous: Mazon Creek, Illinois.

1890. Gerapompus extensus. Scudder, Foss. Insc. N. A., vol. 1, p. 290, pl. 15, figs. 5, 8.

Carboniferous: Mazon Creek, Illinois.

# GERARUS Scudder, 1868.

#### Gerarus danae Scudder.

1868. Miamia Danae. Scudder, Geol. Surv. Ill., vol. 3, p. 566, fig. 1. Carboniferous: Mazon Creek, Grundy County, Illinois.

1885. Gerarus Danæ. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 345. pl. 31,

Carboniferous: Mazon Creek, Illinois.

1890. Gerarus Danæ. Scudder, Foss. Insc. N. A., vol. 1, p. 309, pl. 17, fig. 5. Carboniferous: Mazon Creek, Illinois.

### Gerarus mazonus Scudder.

1885. Gerarus mazonus. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 344, pl. 32, fig. 7.

Carboniferous: Mazon Creek. Illinois.

1890. Gerarus mazonus. Scudder, Foss. Insc. N. A., vol. 1, p. 308, pl. 18, fig. 7. Carboniferous: Mazon Creek, Illinois.

# Gerarus vetus Scudder.

1885. Gerarus vetus. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 344, pl. 31, fig. 6.

Carboniferous: Mazon Creek, Illinois.

1890. Gerarus vetus. Scudder, Foss. Insc. N. A., vol. 1, p. 308, pl. 17, fig. 6. Carboniferous: Mazon Creek, Illinois.

### GERATARBUS Scudder, 1890.

#### Geratarbus lacoei Scudder.

1890. Geratarbus lacoei. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 448, pl. 39, fig. 5.

Carboniferous: Mazon Creek, Illinois.

1890. Geratarbus lacoei. Scudder, Foss. Insc. N. A., vol. 1, p. 424, pl. 32, fig. 11. Carboniferous: Mazon Creek, Illinois.

### Geratarbus scabrum Scudder.

1890. Geratarbus scabrum. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 448, pl. 39, fig. 5.

Carboniferous: Mazon Creek, Illinois.

1890. Geratarbus scabrum. Scudder, Foss. Insc. N. A., vol. 1, p. 424, pl. 31, fig. 5. Carboniferous: Mazon Creek, Illinois.

# (GERVILLIA De France, 1820.)

Gervillia auricula. See Monopteria longispina.

Gervillia longa. See Avicula longa.

Gervillia longispina. See Monopteria longispina.

Gervillia ohioense. See Avicula ohioense.

Gervillia strigosa. See Pterinea strigosa.

Gervillia sulcata. See Avicula sulcata.

# GILBERTSOCRINUS Phillips, 1836.

Gilbertsocrinus dispansus. See Gilbertsocrinus lyonanus.

# Gilbertsocrinus faberi Miller and Gurley.

1896. Goniasteroidocrinus faberi. Miller and Gurley, Bull. No. 10, Ill. State. Mus. Nat. Hist., p. 84, pl. 5, figs. 2, 3.
Keokuk Group: Joplin, Missouri.

### Gilbertsocrinus fiscellus Meek and Worthen.

1860. Trematocrinus fiscellus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 383.

Burlington L. S.: Burlington, Iowa.

1866. Gilbertsocrinus fiscellus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 222, pl. 15, fig. 5.
Burlington L. S.

1897. Gilbertsocrinus fiscellus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 245, pl. 17, figs. 2a-d.
Lower Burlington L. S.: Burlington, Iowa.

# Gilbertsocrinus lyonanus Miller and Gurley.

1894. Goniasteroidocrinus lyonanus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 55, pl. 4, fig. 4.

Keokuk Group: Indian Creek, near Crawfordsville, Indiana.

1897. Gilbertsocrinus dispansus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 240, pl. 15, figs. 2a-d.

Keokuk Group: Indian Creek, Montgomery County, Indiana.

#### Gilbertsocrinus obovatus Meek and Worthen.

1869. Goniasteroidocrinus obvatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 76.

Upper Burlington L.S.: Burlington, Iowa.

1873. Goniasteroidocrinus obovatus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 391, pl. 4, fig. 6.
Burlington L. S.: Burlington, Iowa.

1897. Gilbertsocrinus oboratus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 241, pl. 17, figs. 4a, b.

Upper Burlington L. S.: Burlington and Pleasant Grove, Iowa.

#### Gilbertsocrinus reticulatus Hall.

- 1861. Trematocrinus reticulatus. Hall, Desc. New Spec. Crin., p. 9. Burlington L. S.
- 1861. Trematocrinus reticulatus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 325. Burlington L. S.: Burlington, Iowa.
- 1872. Gilbertsocrinus (Trematocrinus) reticulatus. Hall, Photo. Plates of Crinoids, pl. 6, fig. 12.
- 1897. Gilbertsocrinus reticulatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 244, pl. 17, figs. 1a, b.

Lower Burlington L. S.: Burlington, Iowa; Sedalia, Missouri.

#### Gilbertsocrinus robustus Hall. See Gilbertsocrinus tuberosus.

# Gilbertsocrinus tenuiradiatus Meek and Worthen.

- 1869. Goniasteroidocrinus tenuiradiatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 75.
  - Lower Burlington L.S.: Burlington, Iowa.
- 1873. Goniasteroidocrinus tenuiradiatus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 389, pl. 11, fig. 1.
  - Burlington L. S.: Burlington, Iowa.
- 1897. Gilbertsocrinus tenuiradiatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 246, pl. 17, fig. 3.
  Lower Burlington L. S.: Burlington, Iowa.

#### Gilbertsocrinus tuberculosus Hall.

- 1860. Trematocrinus tuberculosus. Hall Supp., vol .1, pt. 2, Geol. Rep. Ia., p. 75. Burlington L. S.: Burlington, Iowa.
- 1860. Trematocrinus papillatus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 76. Burlington L. S.: Burlington, Iowa.
- 1878. Ollacrinus tuberculosus. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil., p. 263.
- 1893. Ollacrinus papillatus. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 36, pl. 3, fig. 23.
  - Burlington L. S.: Burlington, Iowa.
- 1897. Gilbertsocrinus tuberculosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 243, pl. 17, figs. 5a-c. Upper Burlington L. S.: Burlington, Iowa.

### Gilbertsocrinus tuberosus Lyon and Casseday.

- 1859. Goniasteroidocrinus tuberosus. Lyon and Casseday, Am. Jour. Sci. (2), vol. 28, p. 233.
  - Subcarboniferous Group (Knobstone): Clear Creek, Hardin County, Kentucky; Washington and Montgomery counties, Indiana.
- 1860. Trematocrinus robustus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 77. Keokuk L. S.: Keokuk, Iowa.
- 1872. Gilbertsocrinus (Trematocrinus) robustus. Hall, Photo. Plates of Crinoids, pl. 6, fig. 14.
- 1891. Goniasteroidocrinus tuberosus. Miller, Adv. Sheets, 17th Rep. Geol. Ind., p. 51, pl. 9, fig. 11.
- 1892. Goniasteroidocrinus tuberosus. Miller, 17th Rep. Geol. Surv. Ind., p. 661, pl. 9, fig. 11.
- 1897. Gilbertsocrinus tuberosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 239, pl. 15, figs. 1a, b; pl. 16, figs. 1-6; pl. 17, fig. 6.

  Kenkuk Group: Grawfordsville Indiana: Hardin County Kentucky.
  - Keokuk Group: Crawfordsville, Indiana; Hardin County, Kentucky; Keokuk, Iowa.

#### Gilbertsocrinus typus Hall.

1860. Trematocrinus typus. Hall, Supp. vol. 1, p. 2, Geol. Rep. Ia., p. 73. Burlington L. S.: Burlington, Iowa.

# Gilbertsocrinus typus Hall—Continued.

- 1872. Gilbertsocrinus (Trematocrinus) typus. Hall, Photo. Plates of Crinoids, pl. 6, fig. 13.
- 1878. Ollacrinus typus. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil., p. 262.
- 1894. Gilbertsocrinus typus. Keyes, Mo. Geol. Surv., vol. 4, p. 164.
  Upper Burlington L. S.: Marion County, Missouri; Burlington, Iowa.
- 1897. Gilbertsocrinus typus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 242, pl. 14, figs. 1-3; pl. 17, figs. 7a, b.

Upper Burlington L. S.: Burlington and Pleasant Grove, Iowa.

# (GLAUCONOME Goldfuss, 1826.)

Glauconome nereidis White. See Pinnatopora nereidis. Glauconome trilineata Meek. See Pinnatopora trilineata. Glauconome whitii Foerste. See Pinnatopora whitii.

### GLOSSINA Phillips, 1848.

#### Glossina flabellula Hall and Clarke.

1892. Lingula (Glossina) flabellula. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, p. 172, pl. 1, figs. 33, 34.

Waverly Group: Sciotoville, Ohio.

Berea Grit: Berea, Ohio.

1897. Lingula (Glossina) flabellula. Hall, 14th Ann. Rep. N. Y. State Geol., p. 326, pl. 1, figs. 5, 6.

Waverly Group: Sciotoville and Berea, Ohio.

#### Glossina nebraskensis Meek.

1872. Lingula Scotica var. Nebrascensis. Meek, U. S. Geol. Surv. Nebr., p. 158, pl. 8, figs. 3a, b.

Upper Coal Measures: Nebraska City, Nebraska.

### Glossina sedaliensis Miller.

1892. Lingula sedalionsis. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 54, pl. 9, fig. 2.
Chouteau L. S.: Sedalia, Missouri.

1894. Lingula sedaliensis. Miller, 18th Rep. Geol. Surv. Ind., p. 308, pl. 9, fig. 2. Chouteau L. S.: Sedalia, Missouri.

#### Glossina waverlyensis Herrick.

1875. Lingula Scotica ? Meek, Pal. Ohio, vol. 2, p. 276, pl. 14, fig. 9. (Not L. scotica Davidson.)

Berea Grit: Berea, Ohio.

1887. Lingula scotica (var. ?) Herrick, Bull. Den. Univ., vol. 2, p. 144, pl. 14, fig. 15.

Coal Measures: Flint Ridge, Ohio.

- 1888. Lingula waverlyensis. Herrick, Bull. Den. Univ., vol. 4, p. 18, pl. 3, fig. 1. Waverly Group: Newark, Ohio.
- 1892. Lingula Waverliensis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 4K, fig. 7.

Waverly S. S.: Oil City, Pennsylvania.

1895. Lingula (scotica var.) waverliensis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 22, fig. 1.

(Waverly) Shale above Conglomerate II: Newark, Ohio.

# GLOSSITES Hall, 1885.

# Glossites amygdalinus Winchell.

1863. Sanguinolites amygdalinus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 13. Yellow S. S.: Burlington, Iowa.

1885. Glossites amygdalinus. Hall, Pal. N. Y., vol. 5, pt. 1, p. 501, pl. 40, figs. 13, 14.

Yellow S. S.: Burlington, Iowa.

1888. Sanguinolites (Glossites) amygdalinus? Herrick, Bull. Den. Univ., vol. 3, p. 69.

Waverly Group: Licking County, Ohio.

### GLYPHIOCERAS Hyatt, 1883.

# Glyphioceras cumminsi Hyatt.

1893. Glyphioceras cumminsi. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 467, pl. 47, figs. 33-43.

Carboniferous: 5 miles west of Lampasas, Texas.

### Glyphioceras incisum Hyatt.

1893. Glyphioceras incisum. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 471, pl. 47, figs. 44-48.

Carboniferous: Near Richland Springs, San Saba County, Texas.

# Glyphioceras kentuckiense Miller.

1889. Goniatites kentuckiensis. Miller, N. A. Geol. and Pal., p. 439, fig. 740. St. Louis Group: Crab Orchard, Kentucky.

1893. Glyphioceras Kentuckiense. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 470.

1896. Goniatitis kentuckiensis. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 40, pl. 5, fig. 1.

St. Louis Group: Crab Orchard, Kentucky.

# Glyphioceras sphæricus Martin.

1897. Glyphioceras sphæricus. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 271, pl. 20, figs. 1. 2.

Batesville S. S.: Batesville, Arkansas.

### GLYPTOPORA Ulrich, 1888.

#### Glyptopora elegans Prout.

1860. Coscinium elegans. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 572. Warsaw L. S.: Warsaw, Illinois.

1866. Coscinium elegans. Prout, Geol. Surv. Ill., vol. 2, p. 413, pl. 22, fig. 2. St. Louis Group: Warsaw, Illinois.

1890. Glyptopora elegans. Ulrich, Geol. Surv. Ill., vol. 8, p. 518, pl. 78, figs. 10-10s. Warsaw beds: Warsaw, Illinois.

1894. Glyptopora elegans. Keyes, Mo. Geol. Surv., vol. 5, p. 21. Keokuk L. S.: Warsaw, Illinois.

# Glyptopora keyserlingi Prout.

1858. Coscinium Keyserlingi. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 269. Archimedes L. S.: Warsaw, Illinois.

1859. Coscinium Keyserlingi. Prout, Trans. St. Louis Acad. Sci., vol. 1, pl. 15, figs. 4, 4a.

1860. Coscinium Wortheni. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 571. Keokuk L. S.: Warsaw, Illinois.

1866. Coscinium Wortheni. Prout, Geol. Surv. Ill., vol. 2, p. 412, pl. 22, fig. 1. Keokuk Group: Near Warsaw, Illinois.

Bull. 153----19

# Glyptopora keyserlingi Prout—Continued.

- 1890. Glyptopora keyserlingi. Ulrich, Geol. Surv. Ill., vol. 8, p. 517, pl. 78, figs. 4-4b. Keokuk Group: Warsaw and Nauvoo, Illinois; Keokuk and Bentonsport, Iowa.
- 1894. Glyptopora keyserlingi. Keyes, Mo. Geol. Surv., vol. 5, p. 22. Keokuk L. S.: Keokuk, Iowa.

### Glyptopora megastoma Ulrich.

- 1888. Glyptopora megastoma. Ulrich. Bull. Den. Univ., vol. 4, p. 83.
  - Waverly Group: Sciotoville, Ohio.
  - Keokuk Group: Illinois and Iowa.
- 1890. Glyptopora megastoma. Ulrich, Geol. Surv. Ill., vol. 8, p. 518, pl. 78, figs. 5, 5a. Keokuk Group: Warsaw and Nauvoo, Illinois; Keokuk and Bentonsport, Iowa.
- 1894. Glyptopora megastoma. Keyes, Mo. Geol. Surv., vol. 5, p. 21. Keokuk L. S.: Keokuk and Bentonsport, Iowa.

# Glyptopora michelinia Prout.

- 1860. Coscinium Michelinia. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 573. Warsaw L. S.: Warsaw, Illinois.
- 1866. Coscinium Michelinia. Prout, Geol. Surv. Ill., vol. 2, p. 414, pl. 22, fig. 4. St. Louis Group: Warsaw, Illinois.
- 1890. Glyptopora michelinia. Ulrich, Geol. Surv. Ill., vol. 8, p. 515, pl. 78, figs. 8-85. Warsaw beds: Warsaw, Illinois; Barrett's Station, Missouri.
- 1894. Glyptopora michelinia. Keyes, Mo. Geol. Surv., vol. 5, p. 22. St. Louis L. S.: Barrett's Station, Missouri.

### Glyptopora pinnata Ulrich.

1890. Glyptopora pinnata. Ulrich, Geol. Surv. Ill., vol. 8, p. 516, pl. 78, fig. 2. Burlington L. S.: Sagetown, Henderson County, Illinois.

### Glyptopora plumosa Prout.

- 1860. Coscinium plumosum. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 572.
  Warsaw L. S.: Warsaw, Illinois, and Barrett's Station, St. Louis County,
  Missouri
- 1866. Coscinium plumosum. Prout, Geol. Surv. Ill., vol. 2, p. 414, pl. 22, figs. 3, 3a. St. Louis Group: Warsaw, Ill.; Barrett's Station, Missouri.
- 1890. Glyptopora plumosa. Ulrich, Geol. Surv. Ill., vol. 8, p. 512, pl. 78, fig. 3-3c. Warsaw beds: Warsaw, Illinois; Barrett's Station, Missouri.
- 1894. Glyptopora plumosa. Keyes, Mo. Geol. Surv., vol. 5, p. 20, pl. 33, fig. 5. St. Louis L. S.: Barrett Station, Missouri.

#### Glyptopora punctipora Ulrich.

1890. Glyptopora punctipora. Ulrich, Geol. Surv. Ill., vol. 8, p. 519, pl. 78, figs. 9, 9a. Chester Group: Monroe County, Illinois.

# Glyptopora sagenella Prout.

- 1860. Coscinium sagenella. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 573. Warsaw L. S.: Warsaw, Illinois.
- 1866. Coscinium sagenella. Prout, Geol. Surv. Ill., vol. 2, p. 415, pl. 22, fig. 5. St. Louis Group: Warsaw, Illinois.
- 1890. Glyptopora sagenella. Ulrich, Geol. Surv. Ill., vol. 8, p. 513, pl. 78, figs. 6, 6a. Keokuk Group: Bentonsport, Iowa. Warsaw beds: Warsaw, Illinois.
- 1894. Glyptopora sagenella. Keyes, Mo. Geol. Surv., vol. 5, p. 21. Keokuk L. S.: Bentonsport, Iowa; Warsaw Illinois.

# Glyptopora sagenella var. caliculosa Ulrich.

1890. Glyptopora sagenella var. caliculosa. Ulrich. Geol. Surv. Ill., vol. 8, p. 514. Warsaw beds: Warsaw, Illinois.

# Glyptopora sagenella var. lata Ulrich.

1890. Glyptopora sagemella var. lata. Ulrich, Geol. Surv. Ill., vol. 8, p. 515, pl. 78, fig. 4.

Warsaw beds: Warsaw, Illinois.

# GOMPHOCERAS Sowerby, 1839.

# Gomphoceras clarki Miller.

1891. Gomphoceras clarki. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 88, pl. 19, fig. 1.

St. Louis Group: Corydon, Indiana.

1892. Gomphoceras clarki. Miller, 17th Rep. Geol. Surv. Ind., p. 698, pl. 19, fig. 1. St. Louis Group: Corydon, Indiana.

# Gomphoceras potens Hall.

1879. Gomphoceras potens. Hall, Pal. N. Y., vol. 5, pt. 2, p. 351.

Waverly Group: Medina, Ohio.

1886. Gomphoceras potens. Hall, 5th Ann. Rep. N. Y. State Geol., pl. (122) 7, fig. 8.

Waverly Group: Medina, Medina County, Ohio.

1888. Gomphoceras potens. Beecher, Pal. N. Y., vol. 5, pt. 2, Supp. pl. 122, fig. 8. Waverly Group: Medina, Medina County, Ohio.

# (GONIASTEROIDOCRINUS Lyon and Casseday, 1859.)

Goniasteroidocrinus faberi. See Gilbertsocrinus faberi.

Goniasteroidocrinus lyonanus. See Gilbertsocrinus lyonanus.

Goniasteroidocrinus obovatus. See Gilbertsocrinus obovatus.

Goniasteroidocrinus tenuiradiatus. See Gilbertsocrinus tenuiradiatus. Goniasteroidocrinus tuberosus. See Gilbertsocrinus tuberosus.

### GONIATITES De Haan, 1825.

### Goniatites allei Winchell.

1862. Goniatites Allei. Winchell, Am. Jour. Sci. (2), vol. 33, p. 363. Marshall S. S.: Marshall and Jonesville, Michigan.

1865. Goniatites Allei. Winchell, Proc. Acad. Nat. Sci. Phil., p. 133.

Marshall Group: Hillsdale, Michigan.

### Goniatites andrewsi Winchell.

1870. Goniatites Andrewsi. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 259. Waverly Group: Newark, Ohio.

#### Goniatites baylorensis White.

1891. Goniaties baylorensis. White, Bull. U. S. Geol. Surv., No. 77, p. 19, pl. 2, figs. 1-3.

Permian: Military Crossing of the Big Wichita, Baylor County, Texas.

# Goniatites bellicosus Morton.

1836. Ammonites bellicosus. Morton, Am. Jour. Sci. (1), vol. 29, p. 150, pl. 3, fig. 8. Coal Measures: Ohio Valley.

### Goniatites blairi Miller and Gurley.

1896. Goniatites blairi. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 35, pl. 4, figs. 4, 5.

Chouteau L. S: Six miles from Sedalia, Missouri.

#### Goniatites brownensis Miller.

1891. Goniatites brownensis. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 90, pl. 18, figs. 3, 4.

Waverly or Knobstone Group: Brown County, Indiana.

1892. Goniatites brownensis. Miller, 17th Rep. Geol. Surv. Ind., p. 700, pl. 18, figs. 3, 4.

Waverly or Knobstone Group: Brown County, Indiana.

# Goniatites choctawensis Shumard.

1863. Goniatites Choctawensis. Shumard, Trans. St. Louis Acad. Sci., vol. 2, p. 109.
Coal Measures: Choctaw Nation.

#### Goniatites colubrellus Morton.

1836. Ammonites colubrellus. Morton, Am. Jour. Sci. (1), vol. 29, p. 154, pl. 28, figs. 49, 51.

Coal Measures: Ohio Valley.

### Goniatites compactus Meek and Worthen.

1865. Goniatites compactus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 154.
Coal Measures: Macoupin County, Illinois.

1873. Goniatites compactus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 611, pl. 31, fig. 2.

Coal Measures: Menard County, Illinois.

# Goniatites elkhornensis Miller and Gurley.

1896. Goniatites elkhornensis. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 37, pl. 4, figs. 9-11.

Coal Measures: Elkhorn Creek, Kentucky.

# Goniatites entogonus. See Gastrioceras entogonus.

# Goniatites fultonensis Miller and Gurley.

1896. Goniatites fultonensis. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 39, pl. 4, figs. 15-17.

Coal Measures: Fulton County, Illinois.

Goniatites globulosus. See Gastrioceras globulosum.

Goniatites globulosus var. excelsus. See Gastrioceras excelsum.

#### Goniatites goniolobus Meek.

1877. Goniatites goniolobus. Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 98, pl. 9. figs. 5-5b.

Carboniferous: New Mexico.

# Goniatites gorbyi Miller.

1891. Goniatites gorbyi. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 90, pl. 15, fig. 1.

Chouteau L. S.: Pin Hook Bridge, Pettis County, Missouri.

1892. Goniatites gorbyi. Miller, 17th Rep. Geol. Surv. Ind., p. 700, pl. 15, fig. 1. Chouteau L. S.: Pin Hook Bridge, Pettis County, Missouri.

1894. Goniatites gorbyi. Keyes, Mo. Geol. Surv., vol. 5, p. 220. Chouteau L. S.: Sedalia, Missouri.

### Goniatites greencastlensis Miller and Gurley.

1896. Goniatites greenoastlensis. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 44, pl. 5, figs. 12-14.

St. Louis Group: Greencastle, Indiana.

#### Goniatites greenii Miller.

1892. Goniatites greenii. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 76, pl. 10, figs. 5, 6.

Knobstone Group: Near New Albany, Indiana.

1894. Goniatites greenii. Miller, 18th Rep. Geol. Surv. Ind., p. 330, pl. 10, figs. 5, 6. Knobstone Group: Near New Albany, Indiana.

# Goniatites hathawayanus McChesney.

1860. Goniatites hathawayana. McChesney, Desc. New Pal. Foss., p. 66.

Coal Measures: Lasalle, Illinois.

1865. Goniatites hathawayana. McChesney, Ill. New Spec. Foss., pl. 3, fig. 3.

1868. Goniatites Hathawayanus. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 53, pl. 3, fig. 3.

Coal Measures: Lasalle, Illinois.

#### Goniatites hildrethi Morton.

1836. Ammonites Hildrethi. Morton, Am. Jour. Sci. (1), vol. 29, p. 149, pl. 1, fig. 24; pl. 28, figs. 48, 50, 53.

### Goniatites holmesii Swallow.

1860. Goniatites (?) Holmesii. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 659. Chemung: Cooper County, Missouri.

# Goniatites houghtoni Winchell.

1862. Goniatites Houghtoni. Winchell, Am. Jour. Sci. (2), vol. 33, p. 363. Marshall S. S: Marshall, Michigan.

### Goniatites hyas. See Goniatites lyoni.

### Goniatites illinoisensis Miller and Gurley.

1896. Goniatites illinoisensis. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. His., p. 42, pl. 5, figs. 6-8.

Coal Measures: Montgomery County, Illinois.

#### Goniatites indianensis Miller.

1891. Goniatites indianensis. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 90, pl. 19, figs. 2, 3.

Knobstone or Waverly Group: Clark County, Ind.

1892. Goniatites indianensis. Miller, 17th Rep. Geol. Surv. Ind., p. 700, pl. 19, figs. 2, 3.

Knobstone or Waverly Group: Clark County, Indiana.

Goniatites iowensis. See Paralegoceras iowensis.

Goniatites ixion. See Brancoceras ixion.

# Goniatites jessieæ Miller and Gurley.

1896. Goniatites jessica. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 46, pl. 5, figs. 18-20.

Chouteau L. S.: Near Sedalia, Missouri.

### Goniatites kansasensis Miller and Gurley.

1896. Goniatites kansasensis. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 43, pl. 5, figs. 9-11.

Upper Coal Measures: Kansas City, Missouri.

Goniatites kentuckiensis. See Glyphioceras kentuckiensis.

Goniatites kingii. See Gastrioceras kingii.

# Goniatites leviculus Miller and Faber.

1892. Goniatites leviculus. Miller and Faber, Jour. Cinn. Soc. Nat. Hist., vol. 14, p. 167, pl. 6, figs. 10, 11.

St. Louis Group: Crab Orchard, Kentucky.

# Goniatites limatus Miller and Faber.

1892. Goniatites limatus. Miller and Faber, Jour. Cinn. Soc. Nat. Hist., vol. 14, p. 166, pl. 6, figs. 8, 9.

St. Louis Group: Crab Orchard, Kentucky.

### Goniatites louisianensis Rowley.

1895. Goniatites louisianensis. Rowley, Am. Geol., vol. 16, p. 221, figs. 15-18. Louisiana L. S.: Louisiana, Missouri.

# Goniatites lunatus Miller and Gurley.

1896. Goniatites lunatus. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 41, pl. 5, figs. 2-5.

Coal Measures: Elkhorn Creek, Kentucky.

# Goniatites lyoni Meek and Worthen.

- 1860. Goniatites Lyoni. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 471. Goniatite bed: Rockford, Indiana.
- 1860. Goniatites hyas. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 102, figs,

Goniatite L. S.: Rockford, Indiana.

1866. Goniatites Lyoni, Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 165, pl. 14, figs. 11a-c.

Goniatite bed: Rockford, Indiana.

1879. Goniatites Lyoni. Hall, Pal. N. Y., vol. 5, pt. 2, p. 476, pl. 72, fig. 12; pl. 73, figs. 9-11; pl. 74, fig. 7. Goniatite L. S.: Rockford, Indiana.

1888. Goniatites lyoni. Herrick, Bull. Den. Univ., vol. 3, p. 92.

Waverly Group: Licking County, Ohio.

1888. Goniatites lyoni. Herrick, Bull. Den. Univ., vol. 4, pl. 7, fig. 2. Waverly Group: Ohio.

1895. Goniatites lyoni. Herrick, Geol. Surv. Ohio, vol. 7, pl. 18, fig. 2. Kinderhook Freestone: Granville, Ohio.

#### Goniatites marshallensis Winchell.

1862. Goniatites Marshallensis. Winchell, Am. Jour. Sci. (2), vol. 33, p. 362.
Marshall S. S.: Marshall, Moscow, and Hardwood Point, Michigan.

-1865. Goniatites Marshallensis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 133. Marshall Group: Napoleon Cut, Jackson County, Michigan; Weymouth, Medina County, Ohio.

1870. Goniatites Marshallensis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 258. Waverly Group: Newark, Ohio.

# Goniatites minimus Shumard.

1858. Goniatites minimus. Shumard. Trans. St. Louis Acad. Sci., vol. 1, p. 200. Middle Coal Measures: Above Dover Landing, Missouri.

1894. Goniatites minimus. Keyes, Mo. Geol. Surv., vol. 5, p. 221.

Upper Coal Measures: Dover Landing and Kansas City, Missouri.

#### Goniatites missouriensis Miller and Faber.

1892. Goniatites missouriensis. Miller and Faber, Jour. Cinn. Soc. Nat. Hist., vol. 14, p. 164, pl. 6, fig. 1. Upper Coal Measures: Near Kansas City, Missouri.

# Goniatites monroensis Worthen.

1890. Goniatites monroensis. Worthen, Gool. Surv. Ill., vol. 8, p. 150, pl. 26, fig. 5. St. Louis L. S.: Waterloo, Monroe County, Illinois.

### Goniatites montgomeryensis Miller and Gurley.

1896. Goniatites montgomeryensis. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 38, pl. 4, figs. 12-14. Coal Measures: Montgomery County, Illinois.

# Goniatites morganensis Swallow.

1860. Goniatites Morganensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 659. Chouteau L. S.: Missouri.

#### Goniatites noliensis Cox.

1857. Goniatites noliensis. Cox, Geol. Surv. Ky., vol. 3, p. 574, pl. 10, figs. 1-1b. Coal Measures: Nolin Iron Works, Edmonson County, Kentucky.

1891. Goniatites nolenensis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 264. Lower Coal Measures: Des Moines, Iowa.

#### Goniatites occidentalis Miller and Faber.

1892. Goniatites occidentalis. Miller and Faber, Jour. Cinn. Soc. Nat. Hist., vol. 14, p. 166, pl. 6, figs. 6, 7.

Coal Measures: Elkhorn Creek, Kentucky.

#### Goniatites ohioensis Winchell.

1870. Goniatites Ohiensis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 259. Waverly Group: Newark, Ohio.

# Goniatites opimus White and Whitfield.

1862. Goniatites opimus. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 305.

Chemung Group: Burlington, Iowa.

# Goniatites osagensis Swallow.

1860. Goniatites Osagensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 659.
Chemung Group: Cooper and Moniteau counties. Missouri.

1894. Goniatites osagensis. Keyes, Mo. Geol. Surv., vol. 5, p. 221. Chouteau L. S.: Cooper County, Missouri.

Burlington L. S.: Louisiana, Missouri.

Goniatites oweni. See Munsteroceras oweni.

Goniatites oweni var. parallela. See Munsteroceras parallelum.

# Goniatites parrishi Miller and Gurley.

1896. Goniatites parrishi. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 36, pl. 4, figs. 6-8. Upper Coal Measures: Kansas City, Missouri.

#### Goniatites parvus Shumard.

1858. Goniatites parvus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 199. Upper Coal Measures: Willow Spring, on Santa Fe Road, Kansas.

# Goniatites planorbiformis Shumard.

1855. Goniatites planorbiformis. Shumard, Geol. Surv. Mo., p. 208, pl. C, figs. 11a, b. Coal Measures: Missouri River, above Dover Landing.

1894. Goniatites planorbiformis. Keyes, Mo. Geol. Surv., vol. 5, p. 221. Upper Coal Measures: Kansas City, Missouri.

#### Goniatites politus Shumard.

1858. Goniatites politus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 199. Middle Coal Measures: Lexington, Missouri.

1894. Goniatites politus. Keyes, Mo. Geol. Surv., vol. 5, p. 221. Upper Coal Measures: Lexington, Mo.

### Goniatites propinguus Winchell.

1862. Goniatites propinquus. Winchell, Am. Jour. Sci. (2), vol. 33, p. 365.
Marshall S. S.: Pointe Aux Barques, Michigan.

### Goniatites pygmæus Winchell.

1862. Goniatites pygmæus. Winchell, Am. Jour. Sci. (2), vol. 33, p. 366. Marshall S. S.: † Battle Creek, Michigan.

# Goniatites romingeri Winchell.

1862. Goniatites Romingeri. Winchell, Proc. Acad. Nat. Sci. Phil., p. 427. Marshall Group: Marshall, Michigan.

Goniatites rotatorius. See Brancoceras ixion.

### Goniatites sciotoensis Miller and Faber.

1892. Goniatites sciotoensis. Miller and Faber, Jour. Cinn. Soc. Nat. Hist., vol. 14, p. 165, pl. 6, figs. 2, 3.

Upper Waverly Group: Sciotoville, Ohio.

#### Goniatites shumardianus Winchell.

- 1862. Goniatites Shumardianus. Winchell, Am. Jour. Sci. (2), vol. 33, p. 364. Marshall S. S.: Pointe Aux Barques, Michigan.
- 1870. Goniatites Shumardianus. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 258. Waverly Group: Newark, Ohio.

# Goniatites subcavus Miller and Gurley.

1896. Goniatites subcavus. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 45, pl. 5, figs. 15-17.
Coal Measures: Montgomery County, Illinois.

# Goniatites subcircularis Miller.

1889. Goniatites subcircularis. Miller, N. A. Geol. and Pal., p. 440, fig. 741. St. Louis Group: Crab Orchard, Kentucky.

### Goniatites texanus Shumard.

1863. Goniatites Texanus. Shumard, Trans. St. Louis Acad. Sci., vol. 2, p. 109.
Coal Measure L. S.: Bluffs of Wallace Creek, San Saba County, Texas.

### Goniatites (species undetermined).

1873. Goniatites (sp. undet.). Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 30, figs. 1a, b.

Coal Measures.

1888. Goniatites sp. f Herrick, Bull. Den. Univ., vol. 3, pl. 7, fig. 27. Waverly Group: Licking County, Ohio.

1888. Goniatites sp. Herrick, Bull. Den. Univ., vol. 4, pl. 9, fig. 5. Bedford Shale: Central College, Ohio.

1889. Goniatites sp. Herrick, Am. Geol., vol. 3, pl. 4, fig. 5. Bedford Shale. Ohio.

1895. Goniatites sp. Herrick, Geol. Surv. Ohio, vol. 7, pl. 20, fig. 5. Bedford Shale: Central College, Ohio.

### GONIOCRINUS Miller and Gurley, 1890.

### Goniocrinus sculptilis Miller and Gurley.

1890. Goniocrinus sculptilis. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 352, pl. 6, figs. 2-5.
Kinderhook Group: Legrand, Iowa.

# GONIODON Herrick, 1888.

### Goniodon ohioensis Herrick, 1888.

1888. Goniodon ohioensis. Herrick, Bull. Den. Univ., vol. 3, p. 84, pl. 12, figs. 23-25. Waverly Group, Licking County, Ohio.

1895. Goniodon (Palæoneilo?) ohioensis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 23, fig. 21; pl. 24, fig. 23.
Cuyahoga Shale: Moot's Run, Ohio.

### GONIOPHORA Phillips, 1848.

# Goniophora plicata Hall.

1856. Cypricardella plicata. Hall., Trans. Alb. Inst., vol. 4, p. 18. St. Louis L. S.: Bloomington, Indiana.

1882. Goniophora plicata. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 66, pl. 7, fig. 39.

St. Louis Group: Spergen Hill and Bloomington, Indiana.

1883. Sanguinolites? (Goniophora?) plicata. Hall, 12th Rep. Geol. Surv. Ind., p. 341, pl. 30, fig. 39.

St. Louis Group: Spergen Hill, Bloomington, and Lanesville, Indiana.

# GRAEOPHONUS Scudder, 1890.

# Graeophonus carbenarius Scudder.

- 1876. Libellula carbonaria. Scudder, Proc. Am. Ass. Adv. Sci., vol. 24, p. 111, fig. 1. Carboniferous: Near Sydney, Cape Breton.
- 1876. Libellula carbonaria. Scudder, Can. Nat. (2), vol. 8, p. 88, fig. 1. Carboniferous: Cape Breton, Nova Scotia.
- 1878. Libellula Carbonaria. Dawson, Supp. to 2d ed. Acad. Geol., p. 53, fig. 8. Carboniferous: Nova Scotia.
- 1885. Libellula carbonaria. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 350. Carboniferous: Nova Scotia.
- 1890. Graeophonus carbonarius. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 454, pl. 40, figs. 2, 3, 6.
  Carboniferous: Mazon Creek, Illinois.
- 1890. Graeophonus carbonarius. Scudder, Foss. Insc. N. A., vol. 1, p. 430, pl. 32, figs. 2, 3, 6.

Carboniferous: Mazon Creek, Illinois, and Cape Breton.

# GRAMMYSIA De Verneuil, 1847.

### Grammysia arcuata Conrad.

1884. Grammysia arcuata. Walcott, Pal. Eureka Dist., p. 245, pl. 20, fig. 5.
Lower Carboniferous: Eureka District, Nevada.

### Grammysia blairi Miller.

- 1891. Grammysia blairi. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 93, pl. 20, fig. 4.
  Chouteau, L. S.: Sedalia, Missouri.
- 1892. Grammysia blairi. Miller, 17th Rep. Geol. Surv. Ind., p. 703, pl. 20, fig. 4. Chouteau L. S.: Sedalia, Missouri.

#### Grammysia famelica Herrick.

- 1888. Grammysia famelica. Herrick, Bull. Den. Univ., vol. 4, p. 35, pl. 6, fig. 5. Waverly Group: Granville, Ohio.
- 1895. Grammysia famelica. Herrick, Geol. Surv. Ohio, vol. 7, pl. 17, fig. 5. Upper Cuyahoga Shale: Licking County, Ohio.

#### Grammysia hannibalensis Shumard.

- 1855. Allorisma Hannibalensis. Shumard, Geol. Rep. Mo., p. 206, pl. C, fig. 19. Lithographic L. S.: Hannibal, Missouri.
- 1865. Sanguinolites Hannibalensis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 128. Marshall Group: Hillsdale, Mich.
- 1870. Allorisma (Sedgwickia) Hannibalensis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 256.
  Waverly Group: Newark, Ohio.
- 1875. Grammysia? Hannibalensis. Meek, Pal. Ohio, vol. 2, p. 300, pl. 16. figs. 5a-c. Waverly Group: Medina and Cuyahoga Falls, Ohio; Burlington, Iowa; Hannibal, Missouri.
- 1884. Grammysia Hannibalensis. Walcott, Pal. Eureka Dist., p. 244, pl. 20, fig. 4. Lower Carboniferous: Eureka District, Nevada.
- 1885. Grammysia Hannibalensis. Hall, Pal. N. Y., vol. 5, pt. 1, p. 381, pl. 61, figs. 29, 30, 33.
  - Waverly S. S.: Summit and Cuyahoga Falls, Ohio.
  - Lithographic L. S.: Hannibal, Missouri.
- 1886. Grammysia hannibalensis. Claypole, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 248.
  - Lower Coal Measures: Wilkesbarre, Pennsylvania.

### Grammysia hannibalensis Shumard—Continued.

- 1888. Grammysia hannibalensis. Herrick, Bull. Deu. Univ., vol. 3, p. 75, pl. 4, fig. 13. Waverly Group: Licking County, Ohio.
- 1888. Grammysia (†) hannibalensis. Herrick, Bull. Den. Univ., vol. 4, pl. 6, fig. 11. Waverly Group: Ohio.
- 1894. Allorisma hannibalensis. Keyes, Mo. Geol. Surv., vol. 5, p. 127. Louisiana L. S.: Hannibal, Missouri.
- 1895. Grammysia? hannibalonsis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 17, fig. 11. Kinderhook: Granville, Ohio.

### Grammysia herricki Miller.

- 1888. Grammysia ovata. Herrick, Bull. Den. Univ., vol. 4, p. 35, pl. 3, fig. 12. (Not G. ovata Hall, 1885.)
  - Waverly Group: Newark, Ohio.
- 1892. Grammysia herricki. Miller, First Appendix to N. A. Geol. and Pal., p. 700.
- 1895. Grammysia ovata Herrick, Geol. Surv. Ohio, vol. 7, pl. 24, fig. 7.

· Burlington Group: Newark, Ohio.

# Grammysia ovata Herrick. See Grammysia herricki.

# Grammysia plena Hall.

1885. Grammysia plena. Hall, Pal. N. Y., vol. 5, pt. 1, p. 382, pl. 61, figs. 31, 32. Yellow S. S.: Burlington, Iowa.

# Grammysia rhombeides Meek.

- 1871. Grammysia? rhomboides. Meek, Proc. Acad. Nat. Sci. Phil., p. 72. Waverly Group: Rushville, Ohio.
- 1875. Grammysia? rhomboides. Meek, Pal. Ohio, vol. 2, p. 302, pl. 16, figs. 7a, b. Waverly Group: Medina, Ohio.
- 1888. Grammysia rhomboides. Herrick, Bull. Den. Univ., vol. 3, p. 75, pl. 8, fig. 12. Waverly Group: Licking County, Ohio.

### Grammysia ventricosa Meek.

- 1871. Grammysia ventricosa, Proc. Acad. Nat. Sci. Phil., p. 73. Waverly Group: Rushville, Ohio.
- 1875. Grammysia ventricosa. Meek, Pal. Ohio, vol. 2, p. 303, pl. 13, figs. 5a, b, pl. 16, figs. 6a, b.
  Waverly Group: Medina, Ohio.
- 1888. Grammysia ventricosa. Herrick, Bul. Den. Univ., vol. 3, p. 76. Waverly Group: Licking County, Ohio.

#### Grammysia (species undetermined).

- 1886. Grammysia (sp. ?). Heilprin, 2d Geol. Surv. Penn., Ann. Rep. 1885, p. 442, fig. 8.
  - Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.
- 1886. Grammysia (sp. ?) Heilprin, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 270, fig. 8.
  - Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.
- 1888. Grammysia sp. Herrick, Bull. Den. Univ., vol. 3, p. 76, pl. 12, fig. 3. Waverly Group: Licking County, Ohio.
- 1888. Grammysia, imperfect cast. Herrick, Bull. Den. Univ., vol. 3, pl. 4, fig. 8. Waverly Group: Licking County, Ohio.

# GRANATOCRINUS Troost, 1850.

# Granatocrinus aplatus Rowley and Hare.

- 1891. Granatocrinus aplatus. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 117, pl. 3, figs. 11, 12.
  - Upper Burlington L.S: Louisiana and Spencer Creek north of Curryville, Missouri.

# Granatocrinus concinnulus Rowley and Hare.

1891. Granatocrinus concinnulus. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 117, pl. 3, figs. 13, 14.

Lower Burlington L. S.: Louisiana, Missouri.

Granatocrinus cornutus. See Heteroblastus cornutus.

#### Granatocrinus curtus Shumard.

1855. Pentremites curtus. Shumard, Geol. Rep. Mo., p. 187, pl. B, figs. 3a, b. Archimedes L. S.: Fenton, St. Louis County, Missouri.

1894. Granatocrinus curtus. Keyes, Mo. Geol. Surv., vol. 4, p. 140. St. Louis L. S.: Fenton, Missouri.

# Granatocrinus excavatus Rowley and Hare.

1891. Granatocrinus excavatus. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 99, pl. 2, figs. 9, 10.

Burlington L. S.: Louisiana, Missouri.

### Granatocrinus exiguus Rowley and Hare.

1891. Granatoorinus exiguus. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 100, pl. 2, figs. 13, 14; p. 118, pl. 3, fig. 18.
Lower Burlington L. S.: Louisiana, Missouri.

#### Granatocrinus granulatus Roemer.

\*1852. Pentatremites granulatus. Roemer, Monog. Blast., p. 43. Warsaw Group.

Granatocrinus granulosus. See Schizoblastus granulosus.

Granotocrinus lotoblastus. See Schizoblastus lotoblastus.

# Granatocrinus magnibasis Rowley.

1895. Granatocrinus (Schizoblastus?) magnibasis. Rowley, Am. Geol., vol. 16, p. 220, figs. 11-14.

Upper Burlington L. S.: Louisiana, Missouri.

Granatocrinus melonoides. See Schizoblastus melonoides.

#### Granatocrinus mutabilis Rowley.

1893. Granatocrinus mutabilis. Rowley, Am. Geol., vol. 12, p. 306, pl. 14, figs. 4-9. Chouteau L. S.: 3 miles east of Curryville, Missouri.

# Granatocrinus neglectus Meek and Worthen.

1869. Granatoorinus neglectus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 90.

Lower Burlington L. S.: Burlington, Iows.

1873. Granatocrinus neglectus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 471, pl. 9, fig. 3.

Burlington L. S.: Burlington, Iowa.

1894. Granatocrinus neglectus. Keyes, Mo. Geol. Surv., vol. 4, p. 139. Lower Burlington L. S.: Hannibal and Louisiana, Missouri.

#### Granatocrinus norwoodi Owen and Shumard.

1850. Pentremites norwoodi. Owen and Shumard, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 64, pl. 7, figs. 13a-c.

Subcarboniferous L. S.: Burlington and Augusta, Iowa; Oquawka, Illinois.

1852. Pentremites norwoodii. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 591, tab. 5A, figs. 13a-o.

Subcarboniferous L. S.: Burlington and Augusta, Iowa; Oquawka, Illinois.

1866. Granatocrinus Norwoodi. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 258.

Upper Burlington Group: Burlington, Iowa.

### Granatocrinus norwoodi Owen and Shumard—Continued.

- 1868. Granatocrinus Norwoodi? Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 496, pl. 18, fig. 8.
  - Burlington Group: Burlington, Iowa.
- 1873. Granatoorinus Norwoodi. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 473, pl. 9, fig. 2.
- 1886. Granatocrinus norwoodi. Etheridge and Carpenter, Cat. Blast., p. 245, pl. 2, figs. 34-36; pl. 3, fig. 16; pl. 6, figs. 19, 20; pl. 7, figs. 1-13; pl. 10, fig. 11; pl. 11, fig. 14; pl. 17, fig. 8.
  - Upper Burlington L. S.: Burlington, Iowa; Pleasant Grove, Iowa; near Monmouth, Illinois.
- 1894. Granatocrinus norwoodi. Keyes, Mo. Geol. Surv., vol. 4, p. 140, pl. 18, fig. 10.
  Upper Burlington L. S.: Ash Grove, Palmyra and Hannibal, Missouri.

# Granatocrinus pisum. See Cryptoblastus pisum.

Granatocrinus projectus. See Cryptoblastus projectus.

# Granatocrinus pyriformis Rowley and Hare.

1891. Granatoorinus pyriformis. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 118, pl. 3, figs. 15, 16.
Upper Burlington L. S.: Bear Creek Station, Marion County, Missouri.

# Granatocrinus shumardi Meek and Worthen.

1866. Granatocrinus Shumardi. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 257.

Lower Burlington Group: Burlington, Iowa.

1868. Granatocrinus Shumardi. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 498, pl. 18, figs. 6a, b.

Burlington Group: Burlington, Iowa.

### Granatocrinus sphaeroidalis Miller and Gurley.

1894. Granatocrinus sphaeroidalis. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 65, pl. 6, figs. 31-33.

Kaskaskia Group: Meade County, Kentucky.

# Granatocrinus winslowi Miller and Gurley.

- 1884. Granatocrinus winslowi. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 66, pl. 6, figs. 34, 35.
  - † Burlington Group: Drift at Danville, Illinois.

### GRAPHIOCRINUS De Koninck and Lehon, 1853.

# Graphiccrinus carbonarius Meek and Worthen.

- 1861. Poteriocrinus (Scaphiocrinus?) carbonarius. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 140.
  - Coal Measures: Near Springfield, Illinois.
- 1865. Poteriocrinus (Zeacrinus) carbonarius. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 152.
- 1873. Scaphiocrinus carbonarius. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 562, pl. 24, fig. 2.

Upper Coal Measures: Springfield, Illinois.

1894. Phialocrinus carbonarius. Keyes, Mo. Geol. Surv., vol. 4, p. 219. Upper Coal Measures: Kansas City, Missouri.

Graphiocrinus dactylus. See Scytalocrinus dactylus.

# Graphiccrinus longicirrifer Wachsmuth and Springer.

1890. Graphiocrinus longicirrifer. Wachsmuth and Springer, Geol. Surv. Ill., vol. 8, p. 193, pl. 15, fig. 12; pl. 17, fig. 14.

Kinderhook Group: Legrand, Iowa.

# Graphiccrinus macadamsi Worthen.

1873. Scaphiocrinus McAdamsi. Worthen, Geol. Surv. Ill., vol. 5, p. 495, pl. 15, fig. 2. Keokuk L. S.: Otter Creek, Jersey County, Illinois.

Graphiocrinus 14 brachialis. See Eupachycrinus quatuor-decem-brachialis.

### Graphiccrinus rudis Meek and Worthen.

1869. Scaphiocrinus rudis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 139. Upper Burlington L. S.: Burlington, Iowa.

1873. Scaphiocrinus rudis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 412, pl. 1, fig. 1.
Burlington L. S.: Burlington, Iowa.

# Graphiccrinus simplex Hall.

1858. Scaphiocrinus simplex. Hall, Geol. Iowa, vol. 1, pt. 2, p. 551, pl. 9, fig. 10. Burlington L. S.: Burlington, Iowa.

### Graphiocrinus spinobrachiatus Hall.

1861. Scaphiocrinus spinobrachiatus. Hall, Desc. New Spec. Crin., p. 8. Burlington L. S.

1861. Scaphiorrinus spinobrachiatus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 306.

Burlington L. S.: Burlington, Iowa.

# Graphiccrinus striatus Meek and Worthen.

1869. Scaphiocrinus striatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 142.

Lower Burlington L. S.: Burlington, Iowa.

1873. Scaphiocrinus striatus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 418, pl. 2, fig. 11.

Burlington L. S.: Burlington, Iowa.

# Graphiccrinus tortuosus Hall.

1861. Scaphiocrinus tortuosus. Hall, Desc. New Spec. Crin., p. 7. Burlington L. S.

1861. Scaphiocrinus tortuosus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 309. Burlington L. S.: Burlington, Iowa.

1893. Graphiocrinus tortuosus. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 32, pl. 3, figs. 15-17.

Burlington L. S.: Burlington, Iowa.

# Graphiccrinus wachsmuthi Meek and Worthen.

1861. Poteriocrinus (Scaphiocrinus) Wachemuthi. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 141.

Burlington L. S.: Burlington, Iowa.

1868. Scaphiocrinus Wachsmuthi. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 488, pl. 16, figs. 7a, b.

Burlington Group: Burlington, Iowa.

# GRIFFITHIDES Portlock, 1843.

### Griffithides bufo Meek and Worthen.

1870. Phillipsia (Griffithides) bufo. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 52.

Keokuk Group: Crawfordsville, Indiana.

1873. Phillipsia (Griffthides) bufo. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 528, pl. 15, fig. 10.

Keokuk Group: Crawfordsville, Indiana.

# Griffithides bufo Meek and Worthen-Continued.

1881. Phillipsia bufo. White, 2d Ann. Rep. Dep. Stat. and Geol. Ind., p. 515, pl. 6, fig. 5.

Keokuk Group: Crawfordsville, Indiana.

1887. Griffthides bufo. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 95, pl. 3, figs. 4, 5, 10.

Keokuk Group: Crawfordsville, Indiana.

# Griffithides granulatus Wetherby.

1881. Proctus granulatus. Wetherby, Jour. Cinn. Soc. Nat. Hist., vol. 4, p. 81, pl. 2, figs. 8, 8a, 9, 9a.
Kaskaskia Group: Pulaski County, Kentucky.

1887. Grifithides granulatus. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 101. Chester Series: Pulaski County, Kentucky.

# Griffithides ornatus Vogdes.

\*1897. Griffithides ornatus. Vogdes, Proc. Cal. Acad. Sci., ser. 2, vol. 4, p. 589. Lower Coal Measures: Conway County, Arkansas.

1897. Phillipsia (Griffithides) ornata. Smith, Proc. Am. Phil. Soc., vol. 35, p. 61, pl. 22, fig. 6.

Lower Coal Measures: Conway County, Arkansas.

### Griffithides portlocki Meek and Worthen.

1865. Phillipsia (Griffithides) Portlocki. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 268.
Keokuk L. S.: Warsaw, Illinois.

1873. Phillipsia (Griffithides) Portlocki. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 525, pl. 19, fig. 6.
Keokuk L. S.: Warsaw, Illinois.

1884. Griffithides Portlocki. Walcott, Pal. Eureka Dist., p. 266, pl. 24, figs. 4-4b. Lower Carboniferous: Eureka District, Nevada.

1887. Griffithides portlockii. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 93, pl. 3, fig. 9. Keokuk L. S.: Warsaw, Illinois.

1894. Phillipsia portlocki. Keyes, Mo. Geol. Surv., vol. 4, p. 236, pl. 32, fig. 7. Keokuk L. S.: St. Francisville, Missouri; Keokuk, Iowa.

### Griffithides sangamonensis Meek and Worthen.

1865. Phillipsia (Griffithides?) Sangamonensis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 271. Upper Coal Measures: Springfield, Illinois.

1873. Phillipsia (Griffithides?) Sangamonensis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 615, pl. 32, fig. 4.

Upper Coal Measures: Springfield, Illinois.

1884. Phillipsia (Griffthides?) Sangamonensis. White, 13th Rep. Geol. Surv. Ind., p. 174, pl. 39, figs. 4, 5. Coal Measures: Indiana.

1886. Phillipsia Sungamonensis. Heilprin, 2d Geol. Surv. Penn. Ann. Rep. 1885, p. 458, fig. 14a; p. 446, fig. 14.
Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.

1886. Phillipsia Sangamonensis. Heilprin, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 274, fig. 14, p. 277, fig. 14a.
Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.

1887. Phillipsia sangamonensis. Herrick, Bull. Den. Univ., vol. 2, p. 61, pl. 5, fig. 13.

1887. Griffithides sangamonensis. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 99, pl. 3, figs. 7, 8.

Upper Coal Measures: Springfield, Illinois.

#### Griffithides scitula Meek and Worthen.

- 1865. Phillipsia (Griffithides) soitula. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 270.
  - Upper Coal Measures: Springfield, Illinois.
- 1872. Phillipsia scitula. Meek, U. S. Geol. Surv. Nebr., p. 238, pl. 6, fig. 9.
  Upper Coal Measures: Nebraska City, Nebraska; Springfield, Illinois.
  Lower Coal Measures: Illinois.
- 1873. Phillipsia (Griffithides) scitula. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 612, pl. 32, fig. 3.
  Upper Coal Measures: Springfield, Illinois.
- 1884. Phillipsia (Griffithides?) scitula. White, 13th Rep. Geol. Surv. Ind., p. 173, pl. 39, figs. 6-9.
  - Coal Measures: Perrysville, Eugene, Lodi, Silverwood, and Newport, Indiana.
- 1887. Phillipsia scitula. Herrick, Bull. Den. Univ., vol. 2, p. 62.
- 1887. Griffikides scitula. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 97, pl. 3, figs. 11-13.
  - Upper Coal Measures: Springfield, Illinois; Plattsmouth, Nebraska.
  - Lower Coal Measures: Illinois.
- 1897. Phillipsia (Griffithides) scitula. Smith, Proc. Am. Phil. Soc., vol. 35, p. 61. Lower Coal Measures, White County, Arkansas.

# Griffithides? sedaliensis Vogdes.

- 1888. Griffithides (†) sedaliensis. Vogdes, Trans. N. Y. Acad. Sci., vol. 7, p. 249. Waverly Group: Sedalia, Missouri.
- 1894. Phillipsia sedaliensis. Keyes, Mo. Geol. Surv., vol. 4, p. 235. Chouteau L. S.: Sedalia, Missouri.

# GYROCERAS De Koninck, 1844.

Gyroceras burlingtonensis Owen. See Nautilus burlingtonensis.

### Gyroceras gracile Hall.

1860. Gyrocoras gracile. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 105, figs. 1, 2.

Goniatite L. S.: Rockford, Indiana.

Gyroceras Hartti Dawson. See Stroboceras hartti.

Gyroceras rockfordensis Meek and Worthen. See Solenocheilus rockfordensis.

#### Gyroceras stebos Hall.

- 1886. Gyroceras Stebos. Hall, 5th Ann. Rep. N. Y. State Geol., pl. (126) 11, fig. 7. Waverly Group: Warren, Pennsylvania.
- 1888. Gyroceras? Stebos. Beecher, Pal. N. Y., vol. 5, pt. 2, Supp., p. 36, pl. 126, fig. 7.

Waverly Group: Warren County, Pennsylvania.

### Gyroceras (species undetermined).

1888. Gyroceras sp. Herrick, Bull. Den. Univ., vol. 4, p. 47. Waverly Group: Ohio.

# HADROPHYLLUM Milne-Edwards and Haime, 1850.

# Hadrophyllum aplatum Cummins.

1891. Hadrophyllum aplatus. Cummins, 2d Ann. Rep. Geol. Surv. Tex., p. 552, figs. 60-60b, 61-61b.

Bend Division of the Carboniferous: Texas.

### Hadrophyllum glans White.

- 1862. Zaphreutis glans. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 32. Upper Burlington L. S.: Burlington, Iowa.
- 1880. *Hadrophyllum glans*. White, Cont. to Inv. Pal., No. 8, p. 156, pl. 39, figs. 5a, b.

Upper Burlington L. S.: Burlington, Iowa.

1894. Hadrophyllum glans. Keyes, Mo. Geol. Surv., vol. 4, p. 116, pl. 13, figs. 11a, b. Burlington L. S.: Louisiana and Sedalia, Missouri.

# Hadrophyllum tennesseense Miller and Gurley.

1895. Hadrophyllum tennesseense. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 87, pl. 5, figs. 16-19.

Silicified Subcarboniferous beds of the age of the Keokuk Group: Lincoln County, Tenn.

# HALYSIOCRINUS Ulrich, 1886.

# Halysiccrinus bradleyi Meek and Worthen.

1869. Calceocrinus? Bradleyi. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 73.

Keokuk Group: Crawfordsville, Indiana.

1873. Caloeocrinus f Bradleyi. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 502, pl. 14, fig. 9.

Keokuk Group: Crawfordsville, Indiana.

# Halysiocrinus perplexus Shumard.

1866. Cheirocrinus (Calceocrinus?) perplexus. Shumard, Trans. St. Louis Acad. Sci., vol. 2, p. 358.

Blue calcareous shale (Keokuk): Button-mould Knob, Kentucky.

### Halysiocrinus robustus Worthen.

1890. Calcocrinus robustus. Worthen, Geol. Surv. Ill., vol. 8, p. 92, pl. 12, fig. 7. Keokuk L. S.: Keokuk, Iowa.

#### Halysiocrinus tunicatus Hall.

- 1860. Cheirocrinus tunicatus. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 124. Keokuk L. S.
- 1890. Calceorinus tunicatus. Worthen, Geol. Surv. Ill., vol. 8, p. 93, pl. 12, fig. 6. Keokuk L. S.: Keokuk, Iowa.
- 1894. Calceocrinus tunicatus. Keyes, Mo. Geol. Surv., vol. 4, p. 222, pl. 30, fig. 4. Keokuk L. S.: Keokuk, Iowa.

#### Halysiocrinus ventricosus Hall.

- 1860. Cheirocrinus ventricosus. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 123. Burlington L. S.
- 1860. Cheiroorinus dactylus. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 123, figs. 1, 2.
  Burlington L. S.
- 1860. Cheirocrinus nodosus. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 124. Keokuk L. S.
- 1869. Calceocrinus? Wachsmuthi. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 74. Upper Burlington L. S.: Burlington, Iowa.
- 1872. Calceocrinus nodosus. Hall, Photo. Plates of Crinoids, pl. 6, fig. 15.
- 1873. Calcocrinus (?) Wachsmuthi. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 444, pl. 2, fig. 1.
  Burlington L. S.: Burlington, Iowa.

# Halysiccrinus ventricosus Hall-Continued.

1893. Halysiocrinus ventricosus. Bather, The Crinoidea of Gotland, pt. 1, p. 65, pl. 4, figs. 141, 142.
Burlington L. S.: Burlington, Iowa.

1894. Calceocrinus ventricosus. Keyes, Mo. Geol. Surv., vol. 4, p. 222. Lower Burlington L. S.: Louisiana, Missouri.

# HAPLOPHLEBIUM Scudder, 1867.

### Haplophlebium barnesii Scudder.

1867. Haplophlebium Barnesii. Scudder, Proc. Bost. Soc. Nat. Hist., vol. 11, p. 151. Carboniferous: Cape Bretou.

1867. Haplophlebium Barnesii. Dawson, Geol. Mag. (1), vol. 4, p. 386, pl. 17, fig. 1. Carboniferous: Little Glace Bay, Cape Breton.

1868. Haplophlebium Barnesi. Dawson, Acad. Geol., p. 386, fig. 152.
Coal Measures: Little Glace Bay, Cape Breton.

\*1868. Haplophlebium barnesii. Scudder, Can. Nat. (2), vol. 3, p. 202. Carboniferous: Cape Breton.

1868. Haplophlebium Barnesii. Scudder, Am. Nat., vol. 1, p. 631, pl. 16, fig. 8. Coal Measures: Cape Breton.

1884. Haplophlebium Barnesii. Scudder, Proc. Am. Acad. Arts and Sci., vol. 20, p. 172.
Carboniferous: Cape Breton.

# Haplophlebium longipennis Scudder.

1885. Haplophlebium longipennis. Scudder, Proc. Am. Acad. Arts and Sci., vol. 20, p. 172.

Carboniferous: Pittston, Pennsylvania.

# HARTTINA Hall, 1893.

### Harttina anna Hartt.

1868. Centronella Anna. Hartt, Dawson's Acad. Geol., p. 300, figs. 99a, b. Carboniferous L. S.: Windsor, Nova Scotia.

1894. Harttina Anna. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 52, figs. 29-31.

Carboniferous L. S.: Windsor, Nova Scotia.

1895. Harttina Anna. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 79, figs. 37-39. Carboniferous L. S.: Windsor, Nova Scotia.

# (HELICOPORA Claypole 1883.)

# Helicopora archimedes Claypole. See Archimedes laxus Hall.

### HELIOTRYPA Ulrich 1883.

# Heliotrypa bifolia Ulrich.

1883. Heliotrypa bifolia. Ulrich, Jour. Crinn. Soc. Nat. Hist., vol. 6, p. 278, pl. 13, figs. 6-6c.

Kaskaskia Group: Tateville, Kentucky.

# HEMERISTIA Dana, 1864.

#### Hemeristia occidentalis Dana.

1864. Hemeristia occidentalis. Dana, Am. Jour. Sci. (2), vol. 37, p. 35, fig. 2. Coal Measures: Morris, Illinois,

Bull. 153----20

#### Hemeristia occidentalis Dana—Continued.

1866. Hemeristia occidentalis. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 1, p. 191, pl. 6, figs. 1-3.

Carboniferous: Morris, Illinois.

1885. Hemeristia occidentalis. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 342. Carboniferous: Morris, Illinois.

1890. Hemeristia occidentalis. Scudder, Foss. Insc. N. A., vol. 1, p. 19, 306, pl. 1, figs. 1, 3.

Carboniferous: Morris, Illinois.

# (HEMIPRONITES Pander, 1830.)

Hemipronites crassus. See Derbya crassa.

Hemipronites crenistria. See Orthothetes crenistria and Derbya crassa.

Hemipronites inequalis. See Orthothetes inaequalis.

Hemipronites lasallensis. See Derbya crassa.

Hemipronites umbraculum. See Orthothetes crenistria.

# HEMITRYPA Phillips, 1841.

### Hemitrypa aspera Ulrich.

1890. Hemitrypa aspera. Ulrich, Geol. Surv. Ill., vol. 8, p. 563, pl. 57, figs. 3a, 4-4f.

Keokuk Group: Nauvoo, Illinois; Keokuk and Bentonsport, Iowa.

1894. Hemitrypa aspera. Keyes, Mo. Geol. Surv., vol. 5, p. 25. Keokuk L. S.: Keokuk, Iowa.

### Hemitrypa hemitrypa Prout.

1859. Fenestella hemitrypa. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 444, pl. 17, figs. 4, 4a.

Second Archimedes L. S.: Barrett's Station, St. Louis County, Missouri.

1890. Hemitrypa proutana. Ulrich, Geol. Surv. Ill., vol. 8, p. 560, pl. 57, figs. 1-1c. Keokuk Group: Warsaw, Illinois; Keokuk, Iowa.

Warsaw Beds: Monroe County, and Warsaw, Illinois; Barrett's Station, Missouri.

1894. Hemitrypa hemitrypa. Keyes, Mo. Geol. Surv., vol. 5, p. 25. St. Louis L. S.: Barrett Station, Missouri.

### Hemitrypa hemitrypa var. nodulosa Ulrich.

1890. Hemitrypa proutana var. nodulosa. Ulrich, Geol. Surv. Ill., vol. 8, p. 562. pl. 57, figs. 2-2c.

Keokuk L. S.: Keokuk and Bentonsport, Iowa; Nauvoo, Illinois.

# Hemitrypa hemitrypa var. vermifera Ulrich.

1890. Hemitrypa proutana var. rermifera. Ulrich, Geol. Surv. Ill., vol. 8, p. 561, pl. 57, figs. 5, 5a.

Warsaw Beds: Warsaw, Illinois.

#### Hemitrypa nodosa Ulrich.

1890. Hemitrypa nodosa. Ulrich, Geol. Surv. Ill., vol. 8, p. 562, pl. 57, fig. 3. Keokuk Group: Nauvoo, Illinois; Keokuk and Bentonsport, lowa.

1894. Hemitrypa nodosa. Keyes, Mo. Geol. Surv., vol. 5, p. 25. Keokuk L. S.: Bentonsport, Iowa.

# Hemitrypa pateriformis Ulrich.

1890. Hemitrypa pateriformis. Ulrich, Geol. Surv. Ill., vol. 8, p. 564, pl. 57, figs. 7-7c. Keokuk Group: Keokuk, Iowa.

1894. Hemitrypa pateriformis. Keyes, Mo. Geol. Surv., vol. 5, p. 26. Keokuk L. S.: Keokuk, Iowa.

### Hemitrypa perstriata Ulrich.

1890. Hemitrypa perstriata. Ulrich, Geol. Surv. Ill., vol. 8, p. 564, pl. 57, figs. 6, 6a. Keokuk Group: Bentonsport and Keokuk, Iowa.

1894. Hemitrypa perstriata. Keyes, Mo. Geol. Surv., vol. 5, p. 25. Keokuk L. S.: Keokuk, Iowa.

#### Hemitrypa plumosa Prout.

1858. Fenestella plumosa. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 236. Warsaw, Illinois.

1859. Fenestella plumosa. Prout, Trans. St. Louis Acad. Sci., vol. 1, pl. 15, figs. 2, 2a.

Hemitrypa proutana Ulrich. See Hemitrypa hemitrypa.

Hemitrypa proutana var. nodulosa Ulrich. See Hemitrypa hemitrypa var. nodulosa.

Hemitrypa proutana var. vermifera Ulrich. See Hemitrypa hemitrypa var. vermifera.

HETEROBLASTUS Etheridge and Carpenter, 1886.

#### Heteroblastus cornutus Meek and Worthen.

1861. Pentremites cornutus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 141.
St Louis L. S.: Dry Fork, Brown County, Illinois.

1866. Granatoorinus cornutus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 276, pl. 20, fig. 1.

St. Louis Group: Near Mount Sterling, Brown County, Illinois.

# HETERODICTYA Nicholson, 1875.

### Heterodictya gigantea Nicholson.

1875. Heterodictya gigantea. Nicholson, Geol. Mag., dec. 2, vol. 2, p. 34, pl. 2, figs. 1a-e.

Carboniferous L. S.: Jarvis, Township of Walpole, Ontario.

### HOLOPEA Hall, 1847.

### Holopea conica Winchell.

1863. Holopea conica. Winchell, Proc. Acad. Nat. Sci. Phil., p. 21. Yellow S. S.: Burlington, Iowa.

#### Holopea grandis Miller and Gurley.

1896. Holopea grandis. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 19, pl. 2, figs. 33, 34.

Knobstone Group: Near New Albany, Indiana.

### Holopea newtonesis Whitfield.

1882. Holopea Newtonensis. Whitfield, Ann. N. Y. Acad. Sci., vol. 2, p. 224. Maxville L. S.: Newtonville, Ohio.

1891. Holopea Newtonensis. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 591, pl. 14, fig. 12.

Maxville L. S.: Newtonville, Ohio.

1895. Holopea Newtonensis. Whitfield, Geol. Surv. Ohio, vol. 7, p. 477, pl. 10, fig. 12.
Maxville L. S.: Newtonville, Ohio.

#### Holopea proutana Hall.

1856. Holopea Proutana. Hall, Trans. Albany Inst., vol. 4, p. 30.
St. Louis L. S.: Alton, Illinois; Spergen Hill, Indiana.

1882. Holopea (Callonemat) Proutana. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 72, pl. 8, figs. 33, 34.

St. Louis Group: Spergen Hill and Bloomington, Indiana; Alton, Illinois.

#### Holopea proutana Hall—Continued.

1883. Holopea proutana. Hall, 12th Rep. Geol. Surv. Ind., p. 368, pl. 31, figs. 33, 34.

St. Louis Group: Alton, Illinois; Spergen Hill, Lanesville, and Bloomington, Indiana.

#### Holopea subconica Winchell.

1863. Holopea subconica. Winchell, Proc. Acad. Nat. Sci. Phil., p. 21. (Name preoccupied by Hall, 1859.)

Yellow S. S.: Burlington, Iowa.

## HOLOPELLA McCoy, 1855.

#### Holopella mira Winchell.

1863. Holopella mira. Winchell, Proc. Acad. Nat. Sci. Phil., p. 22.

Yellow S. S.: Burlington, Iowa.

#### HUSTEDIA Hall, 1893.

#### Hustedia meekana Shumard.

1858. Retzia (†) Meekana. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 295. White and Dark Permian L. S.: Guadalupe Mountains.

1859. Retzia Meekiana. Meek and Hayden, Trans. St. Louis Acad. Sci., vol. 1, p. 395, pl. 11, fig. 7.

White and Dark Permian L. S.: Guadalupe Mountains.

#### Hustedia mormoni Marcou.

1858. Terebratula mormoni. Marcou, Geol. N. A., p. 51, pl. 6, figs. 11-11c. Mountain L. S.: Salt Lake City, Utah.

1858. Retzia punctilifera. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 220.
Upper Coal Measures: Audrain and Howard counties, Missouri; below mouth of Platt River, Nebraska; near Manhattan, at Willow Springs, on Santa Fé Road, and headwaters of Verdigris River, Kansas.

1859. Retzia mormoni. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 27.
Upper Coal Measures: Manhattan and Leavenworth, Kansas.

1860. Retzia subglobosa. McChesney, Desc. New. Pal. Foss., p. 45.
Upper Coal Measures: Menard, Mason, Fulton, Peoria, Tazewell, Knox. and Marshall counties, Illinois.

1864. Retzia compressa. Meek, Pal. Cal., vol. 1, p. 14, pl. 2, figs. 7-7c. Carboniferous: Bass's Ranch, Shasta County, California.

1866. Retzia mormoni. Geinitz, Carb. und Dyas in Nebr., p. 39, tab. 3, fig. 6. Plattsmouth, Nebraska.

1868. Retzia punctulifera. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 32, pl. 1, figs. 1a-c.

Lipper Cool Mossyre I. S.: Moyerd Mossy Fulton Receip Togowell Known

Upper Coal Measure L. S.: Menard, Mason, Fulton, Peoria, Tazewell, Knox, and Marshall counties, Illinois.

1872. Retzia punctulifera. Meek, U. S. Geol. Surv. Nebr., p. 181, pl. 1, fig. 13, pl. 5, fig. 7.

Upper Coal Measures: Rock Bluff, Plattsmouth and Nebraska City, Nebraska.

Coal Measures: Nebraska; Kansas; Illinois.

1874. Eumetria punctulifera. Derby, Bull. Cornell Univ. (Sci.), vol. 1, No. 2, p. 4, pl. 8, figs. 4, 5, 7, 8, 10; pl. 9, fig. 3.
Coal Measures: Bomjardim and Itaitúba, Brazil, and Pichis River, Peru.

1877. Retzia Mormonii. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 141, pl. 10, figs. 7a-c.

Carboniferous: Near Santa Fé, New Mexico; top of Grass Mountain, Ely Range, 30 miles north of Pioche, Nevada.

#### Hustedia mormoni Marcou—Continued.

- 1884. Retzia radialis. Walcott, Pal. Eureka Dist., p. 220, pl. 7, figs. 5o-h. Lower and Upper Carboniferous: Eureka District, Nevada.
- 1884. Retzia Mormonii. White, 13th Rep. Geol. Surv. Ind., p. 136, pl. 35, figs. 10-12.

Coal Measures: Indiana.

- 1888. Retzia mormoni. Keyes, Proc. Acad. Nat. Sci. Phil., p. 231. Lower Coal Measures: Des Moines, Iowa.
- 1894. Hustedia Mormoni. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 37, figs. 13-20.

Coal Measures: Near Kansas City, Missouri.

- 1894. Retzia mormoni. Keyes, Mo. Geol. Surv., vol. 5, p. 95, pl. 41, figs. 2a-c. Upper Coal Measures: Kansas City and Lexington, Missouri.
- 1895. Hustedia Mormoni. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 51, figs. 1-9. Coal Measures: Near Kansas City, Missouri.
- 1897. Retzia radialis. Smith, Proc. Am. Phil. Soc., vol. 35, p. 31.
  Upper Coal Measures: Sebastian County, Arkansas, and Poteau Mountain,
  Indian Territory.

#### Hustedia papillata Shumard.

- 1858. Retzia papillata. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 294. White and Dark Permian L. S.: Guadalupe Mountains.
- 1859. Retzia papillata. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 395, pl. 11, fig. 9.

Dark Permian L. S.: Guadalupe Mountains.

#### Hustedia triangularis Miller.

1892. Retzia triangularis. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 61, pl. 9, figs. 25, 26.

Chouteau L. S.: Sedalia, Missouri.

1894. Retzia triangularis. Miller, 18th Rep. Geol. Surv. Ind., p. 315, pl. 9, figs. 25, 26.

Chouteau L. S.: Sedalia, Missouri.

#### HYBOCHINUS Worthen and Miller, 1883.

#### Hybochinus spectabilis Worthen and Miller.

- 1883. Hybochinus speciabilis. Worthen and Miller, Geol. Surv. Ill., vol. 7, p. 332, pl. 31, figs. 5a-d, 6, 7.
  - Chester L. S.: Prairie du Long Creek, Monroe County, Illinois; Pope County, Illinois.
- 1895. Lepidesthes spectabilis. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 184. Kaskaskia L. S.: Prairie du Long Creek, Monroe County, Illinois.

## HYDREIONOCRINUS De Koninck, 1858.

#### Hydreionocrinus acanthophorus Meek and Worthen.

1870. Zeacrinus (Hydreionocrinus) acanthophorus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 28.

Lower Coal Measures: Fulton County, Illinois.

1873. Zeacrinus (Hydreionocrinus) acanthophorus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 563, pl. 24, fig. 11.

Coal Measures: Seaville, Fulton County, Illinois.

- 1874. Zeacrinus (Hydreionocrinus?) acanthophorus. Meek, Am. Jour. Sci. (3), vol. 7, p. 485.
- 1894. Hydreionocrinus acanthophorus. Keyes, Mo. Geol. Surv., vol. 4, p. 215. Upper Coal Measures: Kansas City, Missouri.

## Hydreionocrinus armiger Meek and Worthen.

- 1870. Zeacrinus? armiger. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 27. Chester Group: Pope County, Illinois.
- 1873. Zeacrinus? armiger. Meek and Worthen, Geol. Surv. Iil., vol. 5, p. 547, pl. 21, fig. 3.

Chester Group: Pope County, Illinois.

See also Hydreionocrinus wetherbyi.

## Hydreionocrinus crassidiscus Miller and Gurley.

1894. Hydreionocrinus crassidiscus. Miller and Gurley, Bull. No. 3, Itl. State
Mus. Nat. Hist., p. 43, pl. 6, figs. 18, 19.

Upper Coal Measures: Kansas City, Missouri.

#### Hydreionocrinus depressus Hall.

1858. Zeacrinus depressus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 546, fig. 67.

1881. Hydreionocrinus depressus. Wetherby, Jour. Cinn. Soc. Nat. Hist., vol. 3, p. 325, pl. 9, figs. 1-4, 6.

Kaskaskia Group: Pulaski County, Kentucky.

#### Hydreionocrinus discus Meek and Worthen.

1860. Zeacrinus discus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 390. Upper Coal Measures: Sangamon County, Illinois.

1866. Zeacrinus discus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 312, pl. 26, figs. 3a, b.

Coal Measures: Sugar Creek, Sangamon County, Illinois.

#### Hydreionocrinus granuliferus Miller and Gurley.

1894. Hydreionocrinus granuliferus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 44, pl. 6, figs. 20, 21.

Upper Coal Measures: Kansas City, Missouri.

## Hydreionocrinus mucrospinus McChesney.

1860. Zeacrinus mucrospinus. McChesney, Desc. New Pal. Foss., p. 10.

Coal Measures: Carlinville, Macoupin County, Illinois; Sangamon County, Illinois; Mouth of Rush Creek, Indiana.

1866. Actinocrinus sp. Geinitz, Carb. und Dyas in Nebr., p. 64, Taf. 4, figs. 29a, b. Plattsmouth and Bennett's Mill, Nebraska.

1868. Zeacrinus mucrospinus. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 7, pl. 4, figs. 7a, b.

Coal Measures: Carlinville, Illinois; Sangamon County, Illinois; Rush Creek, Indiana.

1872. Zeacrinus? mucrospinus. Meek, U. S. Geol. Surv. Nebr., p. 149, pl. 5, figs. 2a-c.

Upper Coal Measures: Bennett's Mill, Nebraska City, Plattemouth, Codar Bluff, and Omaha, Nebraska.

Coal Measures: Kansas, Iowa, Illinois, Missouri, Arkansas.

1873. Zeacrinus? mucrospinus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 563, pl. 24, fig. 12.

Upper Coal Measures: Springfield, Illinois.

1894. Hydreionocrinus mucrospinus. Keyes, Mo. Geol. Surv., vol. 4, p. 216.

Upper Coal Measures: Kansas City, Missouri.

1897. Hydreionocrinus mucrospinosus. Smith, Proc. Am. Phil. Soc., vol. 35, p. 26. Upper Coal Measures: Poteau Mountain, Indian Territory.

#### Hydreionocrinus noduliferus Miller and Gurley.

1894. Hydreionocrinus noduliferus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 41, pl. 6, figs. 15-17.

Upper Coal Measures: Kansas ('ity, Missouri.

#### Hydreionocrinus pentagonus Miller and Gurley.

1890. Hydreionocrinus pentagonus. Miller and Gurley, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 17, pl. 2, figs. 6, 7.

Upper Coal Measures: Kansas City, Missouri.

1890. Hydreionocrinus pentagonus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 339, pl. 2, figs. 6, 7.

Upper Coal Measures: Kansas City, Missouri.

1894. Hydreionocrinus pentagonus. Keyes, Mo. Geol. Surv., vol. 4, p. 215. Upper Coal Measures: Kansas City, Missouri.

#### Hydreionocrinus sancti-ludovici Worthen.

1890. Eupachycrinus? sancti-ludorici. Worthen, Geol. Surv. Ill., vol. 8, p. 98. St. Louis L. S.: St. Louis, Missouri.

1894. Hydreionocrinus sanctiludovici. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 40, pl. 6, fig. 2.

St. Louis Group: St. Louis, Missouri.

#### Hydreionocrinus subsinuatus Miller and Gurley.

1894. Hydreionocrinus subsinuatus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 40, pl. 6, figs. 11-14.

Upper Coal Measures: Kansas City, Missouri.

Hydreionocrinus verrucosus. See Eupachycrinus verrucosus.

## Hydreionocrinus wetherbyi Wachsmuth and Springer.

1881. Hydreionocrinus armiger. Wetherby, Jour. Cinn. Soc. Nat. Hist., vol. 3, p. 328, pl. 9, figs. 7-11. Not H. armiger M & W. 1870.

Kaskaskia Group: Pulaski County, Kentucky.

1886. Hydreionocrinus Wetherbyi. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil., p. 169. (Rev. Palæocr. III, p. 245.)

## HYOLITHES Eichwald, 1840.

#### Hyolithes aculeatus Hall.

1860. Puginuculus? (Theca) aculeatus. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 107.

Goniatite L. S.: Rockford, Indiana.

1862. Puginuculus (?) aculeatus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 423. Marshall Group: Adams, Hillsdale County, Michigan.

1865. Puginuculus? aculeatus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 131. Marshall Group: Hillsdale, Michigan.

#### Hyolithes carbonaria Walcott.

1884. Hyolithes carbonaria. Walcott, Pal. Eureka Dist., p. 264, pl. 23, fig. 3. Lower Carboniferous: Eureka District, Nevada.

## Hyolithes lanceolatus Miller.

1892. Hyolithes lanceolatus. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 63, pl. 9, figs. 35, 36.

Chouteau L. S.: Sedalia, Missouri.

1894. Hyolithes lanceolatus. Miller, 18th Rep. Geol. Surv. Ind., p. 317, pl. 9, figs. 35, 36.

Chouteau L. S.: Sedalia, Missouri.

#### HYSTRIOSPONGIA Ulrich, 1890.

#### Hystriospongia carbonaria Ulrich.

1890. Hystriospongia carbonaria. Ulrich, Geol. Surv. Ill., vol. 8, p. 245, pl. 6, fig. 3. Base of Coal Measures: Seville, Illinois.

## ICHTHYOCRINUS Conrad, 1842.

#### Ichthyocrinus burlingtonensis Hall.

1858. Ichthyocrinus burlingtonensis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 557. Burlington L. S.: Burlington, Iowa.

1893. Ichthyocrinus burlingtonensis. Whitfield, Mem. Am. Mus. Nat. His., vol. 1, p. 35, pl. 3, fig. 24.

Burlington L. S.: Burlington, Iowa.

1894. Ichthyocrinus burlingtonensis. Keyes, Mo. Geol. Surv., vol. 4, p. 223. Burlington L. S.: Louisiana, Missouri.

## Ichthyocrinus clarkensis Miller and Gurley.

1894. Ichthyocrinus clarkensis. Miller and Gurley, Bull. No. 5, Ill. State Mus. Nat. Hist., p. 43, pl. 4, fig. 5.

Keokuk or Warsaw Group: Clark County, Indiana.

## Ichthyocrinus greenii Miller.

1892. Ichthyocrinus greenii. Miller, Adv. Sheets, 18th Rep. Gool. Surv. Ind., p. 52, pl. 8, fig. 3.

Keokuk Group: Muldrough Hill, Kentucky.

1894. Ichthyocrinus greenii. Miller, 18th Rep. Geol, Surv. Ind., p. 306, pl. 8, fig. 3. Keokuk Group: Muldrough Hill, Kentucky.

#### Ichthyocrinus nobilis Wachsmuth and Springer.

1878. Ichthyocrinus nobilis. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil.,

Upper Burlington L. S.: Near Burlington, Iowa.

#### Ichthyocrinus spinosulus Miller and Gurley.

1894. Ichthyocrinus spinosulus. Miller and Gurley, Bull. No. 5, Ill. State Mus. Nat. Hist., p. 44, pl. 5, fig. 4.

Knobstone Group: Clark County, Indiana:

#### Ichthyocrinus tiaræformis Hall.

1858. Ichthyocrinus tiaraformis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 558, fig. 71. Carboniferous: White Creek Springs, Davidson County, Tennessee.

## IGOCERAS Hall, 1859.

#### Igoceras capulus Hall.

1860. Platyceras? capulus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 91. Burlington L. S.: Quincy, Illinois; Burlington, Iowa.

1866. Metoptoma (Platyceras?) umbella. Meek and Worthen, Proc. Acad. Nat. Sci. Plil., p. 267.

Burlington L. S.: Quincy, Illinois, and Honey Creek, Henderson County, Illinois.

1868. Metoptoma? umbella. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 506, pl. 15, figs. 6a-c, 7.

Burlington L. S.: Quincy, Illinois; Honey Creek, Henderson County. Illinois.

1889. Metoptoma? umbella. Keyes, Proc. Acad. Nat. Sci. Phil., p. 292. Burlington L. S.: Burlington, Iowa.

1890. Platyceras capulus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 179.

 1892. Igoceras capulus. Keyes, Am. Jour. Sci., vol. 10, p. 276.
 1894. Igoceras capulus. Keyes, Mo. Geol. Surv., vol. 5, p. 183, pl. 52, figs. 1a, b. Burlington L. S.: Hannibal and Ritter's Station, Missouri.

## Igoceras fissurella Hall.

1860. Platyceras fissurella. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 90. Keokuk L. S.: Nauvoo, Illinois.

## Igoceras fissurella Hall-Continued.

1873. Platyceras fissurella. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 519, pl. 17, fig. 4.

Keokuk Group: Warsaw and Nauvoo, Illinois.

1889. Platyceras fissurella. Keyes, Proc. Acad. Nat. Sci. Phil., p. 289. Burlington L. S.: Burlington, Iowa.

1890, Capulus fissurella. Keyes, Am. Geol., vol. 6, p. 9.

1890. Capulus fissurella. Keyes, Proc. Acad. Nat. Sci. Phil., p. 173.

Keokuk L. S.: Warsaw and Nauvoo, Illinois.

Burlington L. S.: Burlington, lowa.

1892. Igoceras fissurellum. Koyes, Am. Geol., vol. 10, p. 276.

1894. Igoceras fissurella. Keyes, Mo. Geol. Surv., vol. 5, p. 186, pl. 52, fig. 2.
Burlington L. S.: Burlington, Iowa.

Keokuk L. S.: Warsaw and Nauvoo, Illinois.

## Igoceras pabulocrinus Owen.

1860. Platyceras subrectum. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 89. (Not P. subrectum Hall, 1859.)

Keokuk L. S.: Keokuk, Iowa; Warsaw, Illinois.

1862. Pileopsis pabulocrinus. Owen, Geol. Reconn. Ind., p. 364, fig. 8. Carboniferous: Crawfordsville, Indiana.

1866. Platyceras (Orthonychia) infundibulum. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 266.

Keokuk Group: Warsaw, Illinois.

1866. Platyceras (Orthonychia) extinctor. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 266.

Keokuk Group: Warsaw, Illinois.

1873. Platyceras infundibulum. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 517, pl. 17, fig. 3.

Keokuk Group: Warsaw, Illinois.

1888. Platyceras infundibulum. Keyes, Proc. Am. Phil. Soc., vol. 25, p. 242, pl., fig. 1.

1889. Platyceras infundibulum. Keyes, Proc. Acad. Nat. Sci. Phil., p. 289. Burlington L. S.: Burlington, Iowa.

1890. Capulus infundibulum. Keyes, Am. Geol., vol. 6, p. 9.

1890. Capulus infundibulum. Keyes, Proc. Acad. Nat. Sci. Phil., p. 174, pl. 2, fig. 10. Keokuk Group: Keokuk, Iowa; Warsaw, Illinois; Crawfordsville, Indiana. Burlington L. S.: Burlington, Iowa.

1892. Igoceras pabulocrinus. Keyes, Am. Geol., vol. 10, p. 276.

1894. Igoceras pabulocrinus. Keyes, Mo. Geol. Surv., vol. 5, p. 184, pl. 52, figs. 3a, b; pl. 54, figs. 3a, b.

Burlington L. S.: Burlington, Iowa; Springfield, Missouri.

Keokuk L. S. and Shales: Keokuk, Iowa; Warsaw, Illinois; Crawfords-ville, Indiana.

#### Igoceras quincyense McChesney.

1861. Platyceras Quincyensis. McChesney, Desc. New. Spec. Pal. Foss., p. 90. Subcarboniferous L. S.: Near Quincy, Illinois.

1865. Platyceras Quincyensis. McChesney, Ill. New Spec. Foss., pl. 6, figs. 6a, b.

1868. Platyceras quincyense. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 49, pl. 6, figs. 6a, b.

Subcarboniferous: Quincy, Illinois.

1868. Platyceras (Orthonychia) Quinoyense. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 510, pl. 15, figs. 5a, b.

Burlington L. S.: Quincy, Illinois.

1868. Platyceras (Orthonychia) Quincyense. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 290.

Burlington L. S.: Burlington, Iowa.

## Igoceras quincyense McChesney—Continued.

- 1889. Platyceras quincyense. Keyes, Proc. Acad. Nat. Sci. Phil., p. 290. Burlington L. S.: Burlington, Iowa,
- 1890. Capulus quincyensis. Keyes, Am. Geol., vol. 6, p. 9.
- 1890. Capulus quincyensis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 168, pl. 2, fig. 9. Burlington L. S.: Burlington, Iowa.
- 1891. Platyceras pettisense. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 81, pl. 14, fig. 1.
  - Burlington Group: Sedalia, Missouri.
- 1891. Platyceras missouriense. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 82, pl. 14, fig. 2.
  Burlington Group: Sedalia, Missouri.
- 1892. Platyceras pettisense. Miller, 17th Rep. Geol. Surv. Ind., p. 601, pl. 14, fig. 1.
  Burlington Group: Sedalia. Missouri.
- 1892. Platyceras missouriense. Miller, 17th Rep. Geol. Surv. Ind., p. 692, pl. 14. fig. 2.
  - Burlington Group: Sedalia, Missouri.
- 1892. Igoceras quincyense. Keyes, Am. Geol., vol. 10, p. 276.
- 1894. Igoceras quincyense. Keyes, Mo. Geol. Surv., vol. 5, p. 182, pl. 53, figs. 10a, b, Burlington L. S.: Quincy, Illinois; Sedalia, Missouri.

#### Igoceras subplicatum Meek and Worthen.

- 1866. Platyceras (Orthonychia) subplicatum. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 265.
  - Chester Group: Pope County and Chester, Illinois.
- 1868. Platyceras (Orthonychia) subplicatum. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 457, pl. 14, figs. 4a-c.
  - Waverly Group: Richfield, Ohio.
- 1890. Capulus subplicatum. Keyes, Proc. Acad. Nat. Sci. Phil., p. 166. Kinderhook beds: Richfield, Ohio.
- 1892. Igoceras subplicatum. Keyes, Am. Geol., vol. 10, p. 276.
- 1894. Igoceras subplicatum. Keyes, Mo. Geol. Surv., vol. 5, pl. 53, fig. 5.

#### ILYODES Scudder 1890.

#### Ilvodes divisa Scudder.

- 1890. *Hyodes divisa*. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 422, pl. 38, fig. 1. Carboniferous: Mazon Creek, Illinois.
- 1890. Ilyodes divisa. Scudder, Foss. Insc. N. A., vol. 1, p. 398, pl. 30, fig. 1. Carboniferous: Mazon Creek, Illinois.

#### Ilvodes elongata Scudder.

- 1890. Ilyodes elongata. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 423, pl. 38, fig. 2.
  - Carboniferous: Mazon Creek, Illinois.
- 1890. Ilyodes elongata. Scudder, Foss. Insc. N. A., vol. 1, p. 399, pl. 30, fig. 2. Carboniferous: Mazon Creek, Illinois.

#### ISOCARDIA Klein, 1753.

## Isocardia curta Shumard.

1858. Isocardia (†) curta. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 206. Coal Measures: Charbonniere, St. Louis County, Missouri.

#### Isocardia jennæ Winchell.

1863. Isocardia? Jenna. Winchell, Proc. Acad. Nat. Sci. Phil., p. 17. Yellow S. S.: Burlington, Iowa.

## Isocardia (species undetermined).

1868. Isocardia (like I. transversa). Dawson, Acad. Geol., p. 304. Carboniferous L. S.: East River, Pictou.

## . KIRKBYA Jones, 1869.

## Kirkova costata Ulrich.

1891. Kirkbya († Barychilina) costata. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 208, pl. 18, figs. 2a, b.
St. Louis Group: Columbia, Illinois.

## Kirkbya lindahli Ulrich.

1891. Kirkbya lindahli. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 207, pl. 18, figs. 6a-c.
St. Louis Group: Columbia, Illinois.

## Kirkbya oblonga var. Ulrich.

1891. Kirkbya oblonga J. & K. var. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 206, pl. 18, figs. 4a, b, 5a, b.

Chester Group: Chester, Illinois; near Grayson Springs, Kentucky.

#### Kirkbya tricollina Ulrich.

1891. Kirkbya tricollina. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 207, pl. 18, figs. 8a, b.

Chester Group: Near Grayson Springs and Litchfield, Kentucky.

## Kirkbya venosa Ulrich.

1891. Kirkbya renosa. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 208, pl. 18, figs. 3a, b.

Chester Group: Near Grayson Springs, Kentucky.

#### (KONINCKIA Suess, 1853.)

## Koninckia americana. See Productus swallovi.

## KONINCKIOCERAS Hyatt, 1883.

#### Koninckioceras scottense Worthen.

1890. Temnocheilus scottense. Worthen, Geol. Surv. Ill., vol. 8, p. 151, pl. 27, figs. 3. 3a.

Warsaw L. S.: Near Winchester, Scott County, Illinois.

1893. Koninckioceras (Temnocheilus) scottense. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 440.

## KUSTARACHNE Scudder, 1890.

## Kustarachne tenuipes Scudder.

1890. Kustarachne tenuipes. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 450, pl. 40, fig. 7.

Carboniferous: Mazon Creek, Illinois.

1890. Kustarachne tenuipes. Scudder, Foss. Insc. N. A., vol. 1, p. 426, pl. 32, fig. 7.

Carboniferous: Mazon Creek, Illinois.

#### LASIOCLADIA Hinde, 1884.

## Lasiocladia hindei Ulrich.

1890. Lasiocladia hindei. Ulrich, Geol. Surv. Ill., vol. 8, p. 249.

Keokuk Group: Nauvoo, Illinois; Keokuk, Iowa; King's Mountain tunnel, Cincinnati Southern Railroad, Lincoln County, Kentucky.

## LATZELIA Scudder, 1890.

#### Latzelia primordialis Scudder.

1890. Latzelia primordialis. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 419, pl. 38, fig. 3.

Carboniferous: Mazon Creek, Illinois.

1890. Latzelia primordialis. Scudder, Foss. Insc. N. A., vol. 1, p. 395, pl. 30, fig. 3.

Carboniferous: Mazon Creek, Illinois.

## LEAIA Jones, 1862.

#### Leaia leidyi Lea.

1855. Cypricardia Leidyi. Lea, Proc. Acad. Nat. Soc. Phil., p. 341, pl. 4, figs. 1, 2. Red Sandstone: Tumbling River Dam, near Pottsville, Pennsylvania.

1862. Leaia Leidyi. Jones, Monog. Foss. Estheriæ (Pal. Soc., vol. 14), p. 116, pl. 5, figs. 11, 12.

Carboniferous: Near Pottsville, Pennsylvania.

1883. Leaia Leidyi. Packard, 12th Ann. Rep. U. S. G. and G. Surv. Terr., p. 358, fig. 24.

Red Sandstone: Near Pottsville, Pennsylvania.

#### Leaia leidyi var. salteriana Jones.

1862. Leaia Leidyi var. Salteriana. Jones, Monog. Foss. Estherize (Pal. Soc., vol. 14), p. 119, pl. 1, fig. 21.

1868. Leaia Leidii. Dawson, Acad. Geol., p. 256, fig. 78e.

Carboniferous: Horton Bluff, Nova Scotia.

1884. Leaia Leidyi var. Salteriana. Jones and Kirkby, Geol. Mag. (3), vol. 1, p. 362, pl. 12, fig. 13.

Lower Carboniferous: Horton, Nova Scotia.

#### Leais tricarinata Meek and Worthen.

1868. Leaia tricarinata. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 541, figs. B1-3, C.

Coal Measures: Lasalle, St. Clair, and Vermilion counties, Illinois.

1884. Leaia tricarinata. White, 13th Rep. Geol. Surv. Ind., p. 167, pl. 39, figs. 10-13.

Coal Measures: Patty's Ford of Little Vermilion River, west of Eugene, Brouillet's Creek, Vermilion County, Indiana.

#### LECYTHIOCRINUS White, 1880.

## Lecythiocrinus adamsi Worthen.

1882. Lecythiocrinus adamsi. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 37.

Lower Coal Measures: Peoria County, Illinois.

1883. Lecythiocrinus Adamsi. Worthen, Geol. Surv. Ill., vol. 7, p. 317, pl. 31, fig. 8.
Lower Coal Measures: Peoria County, Illinois.

#### Lecythiccrinus olliculæformis White.

1880. Lecythiocrinus olliculæformis. White, Proc. U. S. Nat. Mus., vol. 2, p. 257, pl. 1, figs. 4, 5.

Upper Coal Measures: 30 miles west of Humboldt, Kansas.

1880. Lecythiocrinus olliculaeformis. White, Cont. to Pal., No. 6, p. 124, pl. 35, figs. 2a, b.

Upper Coal Measures: 30 miles west of Humboldt, Kansas.

1894. Lecythiocrinus olliculæformis. Keyes, Mo. Geol. Surv., vol. 4, p. 208, pl. 25, fig. 13.

Upper Coal Measures: Kansas City, Missouri.

(LEDA Schumacher, 18:7.)

Leda barrisi. See Palaeoneilo sulcatina.

Leda bellistriata. See Nuculana bellistriata.

Leda curta. See Nuculana curta.

Leda dens-mamillata. See Nuculana dens-mamillata.

Leda diversa. See Nuculana diversa.

Leda gibbosa. See Yoldia rushensis.

Leda knozensis. See Yoldia knozensis.

Leda levistriata. See Yoldia levistriata.

Leda nasuta. See Nuculana nasuta.

Leda nuculæformis. See Palaeoneilo sulcatina.

Leda ohioensis. See Nuculana pandoriformis.

Leda oweni. See Yoldia oweni.

Leda pandoriformis. See Nuculana pandoriformis.

Leda polita. See Yoldia knoxensis.

Leda rushensis. See Yoldia rushensis.

Leda saccata. See Nuculana saccata.

Leda subscitula. See Yoldia subscitula.

## LEIOCLEMA Ulrich, 1882.

#### Leioclema araneum Ulrich.

1890. Leioclema? araneum. Ulrich, Geol. Surv. Ill., vol. 8, p. 431, pl. 75, figs. 9-9c. Chester Group: Monroe County, and Chester, Illinois; Pulaski and Jackson counties, Kentucky.

1894. Leioclema araneum. Keyes, Mo. Geol. Surv., vol. 5, p. 14. Chester Shales: Ste. Genevieve, Missouri; Chester, Illinois.

## Leioclema foliatum Ulrich.

1890. Leioolema foliatum. Ulrich, Geol. Surv. Ill., vol. 8, p. 431, fig. 1, p. 301. Warsaw Beds: Warsaw, Illinois.

1894. Leiociema foliatum. Keyes, Mo. Geol. Surv., vol. 5, p. 14. Keokuk Group: Warsaw, Illinois.

#### Leioclema gracillimum Ulrich.

1888. Leioclema gracillimum. Ulrich, Bull. Den. Univ., vol. 4, p. 92.

Waverly Group: Lodi, Ohio.

1890. Leioclema gracillimum. Ulrich, Geol. Surv. Ill., vol. 8, p. 429, pl. 75, figs. 6-6b.

Kinderhook Group: Marshalltown, Iowa.

Burlington Group: Burlington, Iowa.

Keokuk Group: At most localities.

Warsaw Beds: Warsaw, Illinois.

1894. Leioclema gracillimum. Keyes, Mo. Geol. Surv., vol. 5, p. 13.

Burlington L. S.: Hannibal, Missouri.

Keokuk L. S.; Clark County, Missouri; Keokuk, Iowa; Warsaw, Illinois.

#### Leioclema punctatum Hall.

1858. Callopora punctata. Hall, Geol. Iowa, vol. 1, pt. 2, p. 653.

Warsaw L. S : Keokuk, Iowa; Warsaw, Illinois.

1866. Callopora missouriensis. Rominger, Proc. Acad. Nat. Sci. Phil., p. 117.

#### Leioclema punctatum Hall—Continued.

- 1882. Leioclema punctata. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 5, p. 141, pl. 6, figs. 1, 1a.
- 1888. Leioclema punctatum. Ulrich, Bull. Den. Univ., vol. 4, p. 91. Waverly Group: Cuyahoga Valley, Ohio.
- 1890. Leioclema punctatum. Ulrich, Geol. Surv. Ill., vol. 8, p. 430. Keokuk L. S.: Keokuk, Iowa; Warsaw, Illinois; Lagrange, Missouri; King's Mountain, Kentucky.
- 1894. Leioclema punctatum. Keyes, Mo. Geol. Surv., vol. 5, p. 13. Keokuk L.S.: Lagrange and Wayland, Missouri; Illinois and Iowa.

#### Leioclema subglobosum Ulrich.

1890. Leioclema subglobosum. Ulrich, Geol. Surv. Ill., vol. 8, p. 428, pl. 75, figs. 8-80.

Kinderhook Group: Marshalltown, Iowa.

#### Leioclema wachsmuthi Ulrich.

1890. Leioclema wachemuthi. Ulrich, Geol. Surv. Ill., vol. 8, p. 428, pl. 75, figs. 7-7b. Kinderhook Group: Marshalltown, Iowa.

## LEIOPTERIA Hall, 1883.

#### Leiopteria cuyahoga Herrick.

1891. Leiopteria ouyahoga. Herrick, Bull. Geol. Soc. Am., vol. 2, p. 44, pl. 1, fig. 7. Waverly Group: Cuyahoga Falls, Ohio.

#### Leiopteria halli Herrick.

- 1888. Leiopteria halli. Herrick, Bull. Den. Univ., vol. 3, p. 61, pl. 7, figs. 31, 32. Waverly Group: Licking County, Ohio.
- 1895. Leiopteria halli. Herrick, Geol. Surv. Ohio, vol. 7, pl. 24, fig. 8. Kinderhook Group: Granville, Ohio.

#### Leiopteria nasutus. See Leioptodesina nasutus.

#### Leiopteria newberryi Herrick.

1888. Leiopteria ? ? newberryi. Herrick, Bull. Den. Univ., vol. 4, p. 114, pl. 11, fi 7. 31.

Waverly Group: Ohio.

## Leiopteria ortoni Herrick.

- 1888. Leiopteria ortoni. Herrick, Bull. Den. Univ., vol. 3, p. 60, pl. 7, fig. 1. Waverly Group: Licking County, Ohio.
- 1888. Leiopteria (Leptodesma) ortoni. Herrick, Bull. Den. Univ., vol. 4, pl. 5, fig. 4. Waverly Group: Ohio.
- 1889. Leiopteria (Leptodesma) ortoni. Herrick, Am. Geol., vol. 3, pl. 3, fig. 4.
  1895. Leiopteria (Leptodesma) ortoni. Herrick, Geol. Surv. Ohio, vol. 7, pl. 24, fig. 1. Upper Cuyahoga Shale: Licking County, Ohio.
- 1895. Leiopteria (variety of) ortoni. Herrick, Geol. Surv. Ohio, vol. 7, pl. 24, fig. 10. Kinderhook Group: Ohio.
- 1895. Leiopteria ortoni. Herrick, Geol. Surv. Ohio, vol. 7, pl. 24, fig. 12. Cuyahoga Shale: Ohio.

## Leiopteria speciosa Miller and Gurley.

1896. Liopteria speciosa. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 13, pl. 2, fig. 10. Chouteau L. S.: Near Sedalia, Missouri.

Leiopteria subovata Miller and Gurley.

1896. Liopteria subovata. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 13, pl. 2, figs. 7-9.

Chouteau L. S.: Near Sedalia, Missouri.

## Leiopteria (species undetermined).

- 1888. Leiopteria sp. Herrick, Bull. Den. Univ., vol. 4, pl. 5, figs. 5, 8. Waverly Group: Ohio.
- 1889. Leiopteria sp. Herrick, Am. Geol., vol. 3, pl. 3, figs. 3, 8.
- 1895. Leiopteria sp ?. Herrick, Geol. Surv. Ohio, vol. 7, pl. 24, fig. 9. Kinderhook Group: Granville, Ohio.

## LEIORHYNCHUS Hall, 1860.

#### Leiorhynchus? boonensis Shumard.

- 1855. Rhynchonella Boonensis. Shumard, Geol. Rep. Mo., p. 205, pl. C, figs. 6a, b. Encrinital L. S.: Near Columbia, Boone County, Missouri.
- 1894. Rhynchonella boonensis. Keyes, Mo. Geol. Surv., vol. 5, p. 101. Burlington L. S.: Columbia, Missouri.
- 1895. Leiorhynchus (?) Boonensis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 60, fig. 35.

Chouteau L. S.: Cooper County, Missouri.

#### Leiorhynchus quadricostatum Vanuxem.

- 1842. Orthis quadricostata. Vanuxem, Geol. of N. Y., Rep. on 3d Dist., p. 168, fig. 2.
  - Genesee Slate.
- 1867. Leiorhynchus quadricostata. Hall, Pal. N. Y., vol. 4, p. 357, pl. 56, figs. 44-49. Genesee Slate: Seneca and Cayuga Lakes, New York.
- 1877. Leiorhynchus quadricostatus? Meek, U. S. Geol. Expl. 40th Par., vol. 4, p. 79, pl. 3, figs. 9-9b.

Carboniferous: White Pine Mountains, Nevada.

1895. Liorhynchus quadricostatus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 59, figs. 21, 22.

#### LEPERDITIA Ronault, 1851.

#### Leperditia carbonaria Hall.

- 1856. Cythere carbonaria. Hall, Trans. Albany Inst., vol. 4, p. 33.
  St. Louis L. S.: Spergen Hill, Indiana.
- 1882. Leperditia carbonaria. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 94, pl. 9, figs. 24-27.

St. Louis Group: Spergen Hill and Bloomington, Indiana.

1883. Leperditia carbonaria. Hall, 12th Rep. Geol. Surv. Ind., p. 375, pl. 32, figs. 24-27.

St. Louis Group: Spergen Hill, Bloomington, and Lanesville, Indiana.

#### Leperditia nicklesi Ulrich.

1891. Leperditia nicklesi. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 200, pl. 18, figs. 1a-e.

St. Louis Group: Columbia, Monroe County, Illinois.

#### Leperditia okeni Münster.

- \*1865. Leperditia Okeni. Jones and Kirkby, Ann. Mag. Nat. Hist. (3), vol. 15, p. 406, pl. 20, figs. 1-3.
- 1884. Leperditia Okeni. Jones and Kirkby, Geol. Mag. (3), vol. 1, p. 356, pl. 12, fig. 3.

Lower Coal Measures: Horton, Nova Scotia.

#### Leperditia okeni var. acuta Jones and Kirkby.

- \*1865. Leperditia Okeni var. acuta. Jones and Kirkby, Ann. Mag. Nat. Hist., (3), vol. 15, p. 406.
- 1868. Cyphere. Dawson, Acad. Geol., p. 206, fig. 48c. Carboniferous: Nova Scotia.

## Leperditia okeni var. acuta Jones and Kirkby-Continued.

1884. Leperditia Okeni var. acuta. Jones and Kirkby, Geol. Mag., (3), vol. 1, p. 357, pl. 12, figs. 4a, b.

Coal Measures: Joggins, Nova Scotia.

## Leperditia okeni var. scotoburdigalensis Hibbert.

1868. Leperditia Okeni. Dawson, Acad. Geol., p. 256, fig. 78b.

Carboniferous: Horton, Nova Scotia.

\*1884. Leperditia Scotoburdigalensis. Hibbert, Proc. Berwicksh. Nat. Club, vol. 4, p. 321.

1884. Leperditia Okeni var. Scotoburdigalensis. Jones and Kirkby, Geol. Mag., (3), vol. 1, p. 357, pl. 12, figs. 1, 2.

Lower Coal Measures: Horton, Nova Scotia.

## LEPETOPSIS Whitfield, 1882.

## Lepetopsis chesterensis Worthen.

1884. Lepetopsis chesterensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 25. Lower Chester L. S.: Chester, Illinois.

1890. Lepetopsis chesterensis. Worthen, Geol. Surv. Ill., vol. 8, p. 140, pl. 25, figs. 1, 1a.

Chester L. S.: Chester, Illinois.

## Lepetopsis levettei White.

1882. Patella levettei. White, 11th Rep. Geol. Surv. Ind., p. 359, pl. 39, figs. 4, 5. St. Louis Group: Spergen Hill, Indiana.

1882. Lepetopsis Levettei. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 68, pl. 8, figs. 9-12.

St. Louis Group: Spergen Hill, Indiana.

#### Lepetopsis parrishi Gurley.

1884. Lepetopsis Parrishi. Gurley, New Carb. Foss. Bull. No. 2, p. 7. Upper Coal Measures: Kansas City, Missouri.

#### Lepetopsis (species undetermined).

1891. Patella ?——? White, Bull. U. S. Geol. Surv., No. 77, p. 25, pl. 3, fig. 14.
Permian: Goodwin Creek, Baylor County, Texas.

#### LEPIDECHINUS Hall, 1861.

## Lepidechinus imbricatus Hall.

\*1861. Lepidechinus imbricatus. Hall, Desc. New Spec. Crin., p. 18. Burlington L. S.

1895. Lepidechinus imbricatus. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 192. Burlington L. S.: Burlington, Iowa.

#### Lepidechinus rarispinus Hall.

1867. Lepidechinus rarispinus. Hall, 20th Rep. N. Y. State Cab. Nat. Hist., p. 295, pl. 9, fig. 10.

Chemung S. S.: Meadville, Pennsylvania.

Ferruginous S. S.: Licking County, Ohio.

1870. Lepidechinus rarispinus. Hall, 20th Rep. N. Y. State Cab. Nat. Hist., (rev. ed.), p. 340, pl. 9, fig. 10.

Chemung S. S.: Meadville, Pennsylvania.

Waverly S. S.: Licking County, Ohio.

1895. Lepidechinus rarispinus. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 192.

Chemung S. S.: Meadville, Pennsylvania.

Waverly S. S.: Licking County, Ohio.

## Lepidechinus rarispinus Hall—Continued.

1896. Lepidechinus rarispinus. Jackson, Bull. Geol. Soc. Am., vol. 7, p. 226, pl. 7, fig. 42.

Waverly S. S.: Warren, Pennsylvania.

Lepidechinus squamosus Keyes. See Lepidocidaris squamosus.

## LEPIDESTHES Meek and Worthen, 1868.

#### Lepidesthes colletti White.

1878. Lepidesthes Colletti. White, Proc. Acad. Nat. Sci. Phil., p. 33. Keokuk Group: Salem, Washington County, Indiana.

1880. Lepidesthes colletti. White, Cont. to Inv. Pal., No. 8, p. 163, pl. 40, figs. 2a, b. Keokuk Group: Salem, Washington County, Indiana.

1882. Lepidesthes colletti. White, 11th Rep. Geol. Surv. Ind., p. 362, pl. 41, figs. 2, 3. Keokuk Group: Salem, Washington County, Indiana.

1895. Lepidesthes colletti. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 184. Keokuk Shales: Salem, Washington County, Indiana.

1896. Lepidesthes colletti. Jackson, Bull. Geol. Soc. Am., vol. 7, p. 210.

## Lepidesthes coreyi Meek and Worthen.

1868. Lepidesthes Corcyi. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 525, fig. A. Keokuk Group: Crawfordsville, Indiana.

1873. Lepidesthes Coreyi. Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 16, figs. 2a. b.

1895. Lepidesthes coreyi. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 184. Keokuk Shales: Crawfordsville, Indiana.

1896. Lepidesthes coreyi. Jackson, Bull. Geol. Soc. Am., vol. 7, p. 209.

#### Lepidesthes formosus Miller.

1879. Lepidesthes formosus. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 2, p. 41, pl. 8, fig. 4.

Kaskaskia Group: Pulaski County, Kentucky.

1895. Lepidesthes formosus. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 184. Keokuk Shales: Crawfordsville, Indiana.

1896. Lepidesthes formosus. Jackson, Bull. Geol. Soc. Am., vol. 7, p. 210.

#### Lepidesthes spectabilis Keyes. See Hybochinus spectabilis.

#### Lepidesthes wortheni Jackson.

1896. Lepidesthes wortheni. Jackson, Bull. Geol. Soc. Am., vol. 7, p. 207, pl. 9, fig. 53. Keokuk Group: Crawfordsville, Indiana. (†)

## LEPIDOCIDARIS Meek and Worthen, 1873.

## Lepidocidaris squamosus Meek and Worthen.

1869. Eocidaris † squamosa. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 79.

Lower Burlington L. S.: Burlington, Iowa.

1873. Eocidaris? squamosus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 478, pl. 9, fig. 15.

Burlington L. S.: Burlington, Iowa.

1895. Lepidechinus squamosus. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 193. Burlington, L. S.: Burlington, Iowa.

1896. Lepidocidaris squamosus. Jackson, Bull. Geol. Soc. Am., vol. 7, p. 220, pl. 7, fig. 41.

Lower Burlington L.S.: Burlington, Iowa.

Bull. 153——21

## (LEPIDOCENTRUS Müller, 1856.)

Lepidocentrus irregularis Meek and Worthen. See Pholidocidaris irregularis.

## LEPTÆNA Dalman, 1827.

## Leptæna analoga Phillips.

- 1863. Strophomena analoga. Davidson, Quart. Jour. Geol. Soc. Lond., vol. 19, p. 173, pl. 9, fig. 18.
  - Lower Carboniferous L. S.: Nova Scotia.
- 1868. Strophomena analoga. Dawson, Acad. Geol., p. 295, fig. 95. Carboniferous L. S.: Nova Scotia.

#### Leptæna rhomboidalis Wilkins.

- 1874. Strophomena rhomboidalis White, Prelim. Rep. Inv. Foss., p. 17.
  Subcarboniferous: Mountain Spring, Old Mormon Road, Nevada.
- 1877. Strophomena rhomboidalis. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 85, pl. 5, fig. 5.
  - Subcarboniferous: Mountain Spring, Old Mormon Road, Nevada.
- 1877. Strophomena rhomboidalis. Hall and Whitfield, U. S. Geol. Expl., 40 Par., vol. 4, p. 253, pl. 4, fig. 4.
  - Waverly Group: Dry Canyon, Oquirrh Mountains, Utah.
- 1888. Strophomena rhomboidalis. Herrick, Bull. Den. Univ., vol. 4, pl. 9, fig. 6. Shales above Berea Grit: Central College, Ohio.
- 1889. Strophomena rhomboidalis. Herrick, Am. Geol., vol. 3, pl. 4, fig. 6.
- 1892. Leptaena rhomboidalis. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 13, fig. 9.
  Waverly Group: Mallet's Creek, Ohio.
- 1892. Leptacna rhomboidalis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 8, figs. 30-31, pl. 20, fig. 24.
  - Waverly Group: Mallet's Creek, Ohio, and Medina County, Ohio.
- 1894. Plectambonites rhomboidalis. Keyes, Mo. Geol. Surv., vol. 5, p. 70, pl. 39, fig. 6. Chouteau L. S.: Curryville, Missouri. Burlington L. S.: Louisiana, Missouri.
- 1895. Strophomena rhomboidalis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 20, fig. 6. Bedford Shales: Central College, Ohio.

#### LEPTODESMA Hall, 1883.

#### Leptodesma nasutus Herrick.

- 1888. Leiopteria nasutus. Herrick, Bull. Den. Univ., vol. 4, p. 29, pl. 11, fig. 30. Waverly Group: Bagdad, Medina County, Ohio.
- 1891. Leptodesma nasutus. Herrick, Bull. Geol. Soc. Am., vol. 2, p. 44, pl. 1, fig. 6. Waverly Group: Burbank, Ohio.

#### Leptodesma scutella Herrick.

- 1888. Leptodesma (?) scutella. Herrick, Bull. Den. Univ., vol. 3, p. 59, pl. 4, fig. 16. Waverly Group: Licking County, Ohio.
- 1888. Avicula (Leptodesma) scutella. Herrick, Bull Den. Univ., vol. 4, p. 30, pl. 5, fig. 6.
  - Middle Waverly Group: Ohio.
- 1889. Leptodesma scutella. Herrick, Am. Geol., vol. 3, pl. 3, fig. 6.
- 1895. Leptodesma scutella. Herrick, Geol. Surv. Ohio, vol. 7, pl. 24, fig. 11. Kinderhook Group: Ohio.

#### Leptodesma (species undetermined.)

1884. Leptodesma, sp.? Walcott, Pal. Eureka Dist., p. 234. Lower Carboniferous: Eureka District, Nevada.

## (LEPTODOMUS McCoy, 1844.)

Leptodomus granosus. See Allorisma granosum.

Leptodomus magnus. See Schizodus magnus.

Leptodomus topekaensis. See Sedgwickia topekensis.

## LEPTOPORA Winchell, 1863.

Leptopora expansa. See Leptopora typa.

Leptopora gorbyi. See Leptopora typa.

## Leptopora typa Winchell.

- 1863. Leptopora typa. Winchell, Proc. Acad. Nat. Sci. Phil., p. 3. Yellow S. S.: Burlington, Iowa.
- 1880. Leptopora typa. White, Cont. to Inv. Pal., No. 6, p. 122, pl. 34, figs. 12a, b. Subcarboniferous: Burlington, Iowa.
- 1880. Michilinia? placenta. White, Cont. to Inv. Pal., No. 8, p. 157, pl. 39, figs. 1a-d.
  Top of Chouteau L. S.: Sedalia, Missouri.
- 1880. Michilinia expansa. White, Cont. to Inv. Pal., No. 8, p. 158, pl. 39, figs. 2a, b. Top of Chouteau L. S.: Sedalia, Missouri.
- 1891. Leptopora gorbyi. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 6, pl. 1, figs. 1-4.
  - Chouteau L. S.: Near Sedalia, Missouri.
- 1892. Leptopora gorbyi. Miller, 17th Rep. Geol. Surv. Ind., p. 616, pl. 1, figs. 1-4. Chouteau L. S.: Near Sedalia, Missouri.
- 1894. Cleistopora placenta. Keyes, Mo. Geol. Surv., vol. 4, p. 119, pl, 14, fig. 11. Chouteau L. S.: Sedalia and Curryville, Missouri.
- 1894. Cleistopora typa. Keyes, Mo. Geol. Surv., vol. 4, p. 119. Kinderhook: Sedalia, Missouri.

#### Leptopora winchelli White.

- 1879. Leptopora winchelli. White, Bull. U. S. Geol. and Geog. Surv. Terr., vol. 5, p. 211.
  - Carboniferous: Near the forks of Logan River, in Bear River Range, north-
- 1880. Leptopora winchelli. White, Cont. to Inv. Pal., No. 6, p. 121, pl. 34, fig. 11a. Carboniferous: Near the Forks of Logau River, in Bear River Range, northern Utah.

## LEUROCERAS Hyatt.

## Leuroceras chesterensis Meek and Worthen.

- 1860. Nautilus Chesterensis. Meek and Worthen, Proc.Acad. Nat. Sci. Phil.,p. 469. Chester L. S.: Chester, Illinois.
- 1866. Nautilus chesterensis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 306, pl. 24, figs. 4a, b.

Chester Group: Chester, Illinois.

1893. Nautilus chesterensis. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 438.

## (LIBELLULA Linneus.)

Libellula carbonaria Scudder. See Graeophonus carbonarius.

LIMA Brugueire, 1791.

#### Lima chesterensis Worthen.

1890. Lima chesterensis. Worthen, Geol. Surv. Ill., vol. 8, p. 120, pl. 22, fig. 7. Chester Shale: Chester, Illinois.

## Lima menardi. See Aviculopecten menardi.

#### Lima retifera Shumard.

- 1858. Lima retifera. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 214.
  Coal Measures: Valley of Verdigris, Kausas.
- 1866. Lima retifera? Geinitz, Carb. und Dyas in Nebr., p. 36, tab. 2, figs. 20, 21. Nebraska City, Nebraska.
- 1872. Lima retifera. Meek, U. S. Geol. Surv. Nebr., p. 188, pl. 9, fig. 5.
  Upper Coal Measures: Nebraska City, Nebraska; Verdigris River, Kansas.
  Coal Measures: Illinois.
- 1873. Lima retifera. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 588, pl. 26, fig. 2. Coal Measures: Springfield, Illinois.
- 1884. Lima retifera. White, 13th Rep. Geol. Surv. Ind., p. 138, pl. 28, fig. 4. Coal Measures: Knox, Gibson, and Posey counties, Indiana.
- 1887. Lima retifera. Herrick, Bull. Den. Univ., vol. 2, p. 29, pl. 4, fig. 25; pl. 5, fig. 3.
  - Coal Measures: Flint Ridge, Ohio.
- 1891. Lima retifera. Keyes, Proc. Acad. Nat. Sci. Phil., p. 248. Lower Coal Measures: Des Moines, Iowa.
- 1894. Lima retifera. Keyes, Mo. Geol. Surv., vol. 5, p. 108, pl. 42, fig. 1. Coal Measures: Clinton and Kansas City, Missouri.
- 1897. Lima retifera. Smith, Proc. Am. Phil. Soc., vol. 35, p. 34.
  Upper Coal Measures: Poteau Mountain, Indian Territory.

#### LIMATULINA de Koninck, 1885.

#### Limatulina ohioensis Herrick.

- 1888. Limatulina (†) ohioensis. Herrick, Bull. Den. Univ., vol. 3, p. 55, pl. 2, fig. 20; pl. 3, fig. 10.
  Waverly Group: Licking County, Ohio.
- 1895. Limatulina † ohioensis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 24, fig. 19. Burlington Group: Licking County, Ohio.

## LINGULA Bruguiere, 1792.

#### Lingula atra Herrick.

- 1888. Lingula atra. Herrick, Bull. Den. Univ., vol. 4, p. 16, pl. 10, fig. 30.

  Waverly Group: Above junction of Cuyahoga and Little Cuyahoga rivers, Ohio.
- 1895. Lingula atra. Herrick, Geol. Surv. Ohio, vol. 7, pl. 22, figs. 5, 6. Cuyahoga or Berea Shales: Cuyahoga River, Ohio.

#### Lingula carbonaria Shumard.

1858. Lingula carbonaria. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 215. Coal Measures: Clark County, Missouri.

#### Lingula crawfordsvillensis Gurley.

1883. Lingula Crawfordsrillensis. Gurley, New Carb. Foss., Bull. No. 1, p. 2. Keokuk Group: Crawfordsville, Indiana.

#### Lingula cuyahoga Hall.

- 1863. Lingula cuyahoga. Hall, 16th Rep. N. Y. State Cab. Nat. Hist., p. 24. Waverly S. S.: Cuyahoga Falls and Akron, Ohio.
- 1865. Lingula Cuyahoga. Winchell, Proc. Acad. Nat. Sci. Phil., p. 112.
  Marshall Group: Hillsdale, Michigan; Wethersfield, Trumbull County,
  Ohio.
- 1867. Lingula cuyahoga. Hall, Pal N. Y., vol. 4, p. 15, pl. 1, fig. 5. Waverly S. S.: Cuyahoga Falls and Akron, Ohio.

## Lingula cuyahoga Hall—Continued.

- 1888. Lingula cuyahoga. Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 29. Waverly Group: Cuyahoga Valley, Ohio.
- 1895. Lingula Cuyahoga. Herrick, Geol. Surv. Ohio, vol. 7, pl. 22, fig. 9. Cuyahoga or Berea Shale: Cuyahoga River, Ohio.

## Lingula flabellula. See Glossina flabellula.

## Lingula gannensis Herrick.

- 1885. Lingula gannensis. Herrick, Bull. Den. Univ., vol. 4, p. 17, pl. 3, figs. 2, 3. Middle Waverly; Gann, Knox County, Ohio.
- 1895. Lingula gannensis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 22, figs. 2, 3. Middle Waverly Group: Knox County, Ohio.

## Lingula gorbyi Miller.

- 1892. Lingula gorbyi. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 55, pl. 9, figs. 3, 4.
  - Chouteau L. S.: Sedalia, Missouri.
- 1894. Lingula gorbyi. Miller, 18th Rep. Geol. Surv. Ind., p. 309, pl. 9, figs. 3, 4. Chouteau L. S.: Sedalia, Missouri.

#### Lingula halli White.

1862. Lingula Halli. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 30. L. Burlington L. S.: Burlington, Iowa.

#### Lingula indianensis Miller and Gurley.

1894. Lingula indianensis. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 69, pl. 7, fig, 1.

Keokuk Group: Crawfordsville, Indiana.

#### Lingula meeki Herrick.

- 1888. Lingula meeki. Herrick, Bull. Den. Univ., vol. 4, p. 18, pl. 10, fig. 31. Waverly Group: Cuyahoga Valley, Ohio.
- 1895. Lingula meeki. Herrick, Gool. Surv. Ohio, vol. 7, pl. 22, figs. 7, 8. Cuyahoga or Berea Shale: Cuyahoga River, Ohio.

#### Lingula melie Hall.

- 1863. Lingula melie. Hall, 16th Rep. N. Y. State Cab. Nat. Hist., p. 24. Chemung Group: Chagrin Falls, Ohio.
- 1867. Lingula melie. Hall, Pal. N. Y., vol. 4, p. 14, pl. 1, figs. 3, 4. Chemung Group: Chagriu Falls, Ohio.
- 1875. Lingula melie? Meek, Pal. Ohio, vol. 2, p. 276, pl. 14, fig. 3. Cuyahoga Shale: Johnson, Trumbull County, Ohio.
- 1888. Lingula melie? Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 32.
  Waverly Group: Cuyahoga Valley, Ohio.
- 1888. Lingula melie. Herrick, Bull. Den. Univ., vol. 4, pl. 19, fig. 1. Bedford Shale: Central College, Ohio.
- 1889. Lingula melie. Herrick, Am. Geol., vol. 3, pl. 4, fig. 1.
  Bedford Shale: Ohio.
- 1892. Lingula Melie. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 1, fig. 32. Waverly Group: Berea, Ohio.
- 1895. Lingula melie. Herrick, Geol. Surv. Ohio, vol. 7, pl. 20, fig. 1; pl. 22, fig. 10. Bedford Shale: Central College, Ohio. Cuyahoga or Berea Shale: Cuyahoga River, Ohio.

## Lingula membranacea Winchell.

- 1863. Lingula membranacea. Winchell, Proc. Acad. Nat. Sci. Phil., p. 3. Yellow S. S.: Burlington, Iowa.
- 1870. Lingula membranacea. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 248. Waverly Group: Near Shafers, Pennsylvania.

### Lingula membranacea Winchell—Continued.

1875. Lingula (Linguella?) membranacea. Meek, Pal. Ohio, vol. 2, p. 275, pl. 14, fig. 14.

Waverly Group: Harts Grove, Ashtabula County, Ohio.

1888. Lingula membranacea. Herrick, Bull. Den. Univ., vol. 4, p. 17, pl. 3, fig. 4. Waverly Group: 4 miles southwest of Loudonville, Ohio.

1895. Lingula membranacea. Herrick, Geol. Surv. Ohio, vol. 7, pl. 22, fig. 4. Sixty feet above Conglomerate II (Waverly Group): Loudonville, Ohio.

Lingula mytiloides. See Lingula umbonata.

## Lingula paracletus Hall and Clarke.

1892. Lingula paracletus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, p. 172; p. 12, fig. 8.

Cuyahoga Shale: Chardon, Ohio.

1897. Lingula paracletus. Hall, 14th Rep. N. Y. State Geol., p. 326, fig. 1. Cuyahoga Shale: Chardon, Ohio.

## Lingula parrishi Miller.

1892. *Ungula parrishi*. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 53, pl. 8, fig. 2; pl. 9, fig. 1.

Upper Coal Measures: Kansas City, Missouri.

1894. Lingula parrishi. Miller, 18th Rep. Geol. Surv. Ind., p. 307, pl. 8, fig. 2; pl. 9, fig. 1.

Upper Coal Measures: Kansas City, Missouri.

Lingula scotica. See Glossina waverlyensis.

Lingula scotica var. nebraskensis. See Glossina nebraskensis.

Lingula sedaliensis. See Glossina sedaliensis.

Lingula subspatulata. See Barroisella subspatulata.

#### Lingula tighti Herrick. -

1887. Lingula tighti. Herrick, Bull. Den. Univ., vol. 2, p. 43, pl. 4, fig 5. Coal Measures: Flint Ridge, Ohio.

#### Lingula umbonata Cox.

1857. Lingula umbonata. Cox, Geol. Surv. Ky., vol. 3, p. 576, pl. 10, figs. 4, 4a.
Coal Measures: Crittenden, Union and Hancock counties, Kentucky.

1873. Lingula mytiloides? Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 572, pl. 25, fig. 2.
Coal Measures: Illinois.

1884. Lingula umbonata. White, 13th Rep. Geol. Surv. Ind., p. 120, pl. 25, fig. 14. Coal Measures: Vermilion County, Indiana.

1887. Lingula umbonata? Herrick, Bull. Den. Univ., vol. 2, p. 144, pl. 14, fig. 2. Coal Measures: Flint Ridge, Ohio.

1888. Lingula umbonata. Keyes, Proc. Acad. Nat. Sci. Phil., p. 226. Lower Coal Measures: Des Moines, Iowa.

1894. Lingula umbonata. Keyes, Mo. Geol. Surv., vol 5, p. 38, pl. 35, fig. 4. Coal Measures: Clinton and Kansas City, Missouri.

#### Lingula varsoviensis Worthen.

1884. Lingula varsoviensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 24. Warsaw Beds: Warsaw and near Hamilton, Illinois.

1890. Lingula rarsoviensis. Worthen, Geol. Surv. Ill., vol. 8, p. 104, pl. 11, fig. 8. Warsaw L. S.: Warsaw and near Hamilton, Illinois.

Lingula waverlyensis. See Glossina waverlyensis.

Lingula (species undetermined).

1868. Lingula. Rogers, Geol. Rep. Penn., vol. 2. p. 833, fig. 693.

## LINGULODISCINA Whitfield, 1890.

#### Lingulodiscina connata Walcott.

1884. Discina connata. Walcott, Pal. Eureka Dist., p. 214, pl. 7, figs. 3, 3a. Lower Carboniferous L. S.: Eureka District, Nevada.

## Lingulodiscina newberryi Hall.

- 1863. Discina newberryi. Hall, 16th Rep. N. Y. State Cab. Nat. Hist., p. 30. Waverly Group: Cuyahoga Falls and Akron, Ohio.
- 1867. Discina newberryi. Hall, Pal. N. Y., vol. 4, p. 23, pl. 1, figs. 10a, b, 11a-c. Waverly Group: 110 feet below Conglomerate at Cuyahoga Falls and Akron, Ohio.
- 1875. Discina (Orbiculoidea) Newberryi. Meek, Pal. Ohio, vol. 2, p. 277, pl. 14, figs. 1a-d.
  - Cuyahoga Shale: Farmington, Ohio.
- 1884. Discina Newberryi. Walcott, Pal Eureka Dist., p. 213, pl. 18, figs. 3 (2, 2a?). Lower Carboniferous L. S.: Eureka District, Nevada.
- 1888. Orbiculoidea newberryi. Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 33. Waverly Group: Cuyahoga Valley, Ohio.
- 1889. Orbiculoidea newberryi? Herrick, Am. Geol., vol. 3, pl. 4, fig. 2. Bedford Shale: Ohio.
- 1892. Orbiculoidea Newberryi. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 4F, fig. 18.
  Waverly Group: Cuyahoga Falls, Ohio.
- 1894. Discina newberryi. Keyes, Mo. Geol. Surv., vol. 5, p. 40.
  Kinderhook Group: Sedalia, Springfield, and Louisiana, Missouri.
- 1895. Orbiculoidea newberryi. Herrick, Geol. Surv. Ohio, vol. 7, pl. 22, figs. 11-13. Cuyahoga or Berea Shale: Cuyahoga River, Ohio.

#### Lingulodiscina pleurites Meek.

- 1875. Discina (Orbiculoidea?) pleurites. Meek, Pal. Ohio, vol. 2, p. 278, pl. 14, figs. 2a, b.
  - Waverly Group: Newark, Ohio.
- 1888. Orbiculoidea sp. ? Herrick, Bull. Den. Univ., vol. 3, p. 30, pl. 8, fig. 14. Waverly Group: Licking County, Ohio.
- 1888. Orbiculoides pleurites. Herrick, Bull. Den. Univ., vol. 4, p. 19, pl. 3, fig. 5; pl. 10, fig. 42.
  - Waverly Group: Newark and near Gann, Ohio; Cuyahoga Falls, Ohio.
- 1892. Œhlertella pleurites. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 5, figs. 5-8.
  - Waverly Group: Newark, Ohio.
- 1892. Œhlertella pleurites. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 4E, figs. 21-24; pl. 4F, figs. 19, 20.
  Waverly Group: Newark, Ohio.
- 1895. Orbiculoidea pleurites. Herrick, Geol. Surv. Ohio, vol. 7, pl. 22, fig. 12. Shale above Conglomerate II (Waverly Group): Newark, Gann, and Londonville, Ohio.

## LITHOMYLACRIS Scudder, 1879.

## Lithomylacris angusta Scudder.

- 1879. Lithomylacris angustum. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 48, pl. 5, figs. 2, 3.
  - Upper Coal Measures: Pittston, Pennsylvania.
- 1890. Lithomylacris angusta. Scudder, Foss. Insc. N. A., vol. 1, p. 68, pl. 5, figs. 2, 3.
  - Upper Carboniferous: Pittston, Pennsylvania.
- 1895. Lithomylacris angusta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 50. Coal Measures: Near Pittston, Pennsylvania.

## Lithomylacris pauperata Scudder.

1890. Lithomylacris pauperata. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 409, pl. 24, fig. 5.

Carboniferous: Port Griffith, Pennsylvania.

1890. Lithomylacris pauperata. Scudder, Foss. Insc. N. A., vol. 1, p. 385, pl. 32, fig. 5.

Carboniferous: Port Griffith, Pennsylvania.

1895. Lithomylacris pauperata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 51. Coal Measures: Near Pittston, Pennsylvania.

## Lithomylacris pittstoniana Scudder.

1879. Lithomylacris pittstonianum. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 50, pl. 5, figs. 4, 10.

Upper Coal Measures: Pittston, Pennsylvania.

1890. Lithonylacris pittstonianum. Scudder, Foss. Insc. N. A., vol. 1, p. 70, pl. 5, figs. 4, 10.

Upper Carboniferous: Pittston, Pennsylvania.

1895. Lithomylacris pittstoniana. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 50. Coal Measures: Near Pittston, Pennsylvania.

#### Lithomylacris simplex Scudder.

1879. Lithomylacris simplex. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 51, pl. 5, fig. 5.

Lower Coal Measures: Danville, Illinois.

1890. Lithomylacris simplex. Scudder, Foss. Insc. N. A., vol. 1, p. 71, pl. 5, fig. 5. Lower Coal Measures: Danville, Illinois.

1895. Lithomylacris simplex. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 51. Lower Coal Measures: Danville, Illinois.

#### LITHOPHAGA Lamark, 1812.

#### Lithophaga batesvillensis Weller.

1897. Lithophaga? batesvillensis. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 263, pl. 19, figs. 14, 15.

Batesville S. S.: Batesville, Arkansas.

#### Lithophaga illinoisensis Worthen.

 Lithophaga † lingulis (†). Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 245.

Keokuk Group: Warsaw, Illinois.

1868. Lithophaga lingualis? Meek and Worthen, Geok Surv. Ill., vol. 3, p. 536, pl. 19, figs. 1, 2.
Keokuk Group: Warsaw, Illinois; Crawfordsville, Indiana.

1882. Lithophaga Illinoiensis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 39.

#### Lithophaga lingualis. See Lithophaga illinoisensis.

#### Lithophaga pertenuis Meek and Worthen.

1865. Lithophaga? pertenuis. Meek and Worthen, Proc. Acad. Nat. Soi. Phil., p. 245.

Warsaw, L. S.: Warsaw, Illinois.

1873. Lithophaga t pertenuis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 539, pl. 22, fig. 1.

Warsaw Beds: Warsaw, Illinois.

1894. Lithophaga pertenuis. Keyes, Mo. Geol. Surv., vol. 5, p. 117. St. Louis L. S.: St. Louis, Missouri.

#### . Lithophaga (species undetermined).

1894. Lithophaga sp.? Keyes, Mo. Geol. Surv., vol. 5, p. 116, pl. 43, figs. 8a, b. Burlington L. S.: Louisana, Missouri.

## LITHOSTROTION Lbwyd, 1869.

Lithostrotion basaltiforme Owen. See Lithostrotion canadense.

#### Lithostrotion californiense Meek.

1864. Lithostrotion? Californiense. Meek, Pal. Cal., vol. 1, p. 6, pl. 1, figs. 2-2c. Carboniferous: Bass's Ranch, Shasta County, California.

#### Lithostrotion canadense Castelnau.

- \*1843. Axinura Canadensis. Castelnau, Terr. Sil. de l'Amer. du Nord., pl. 24, fig. 4.
- \*1843. Astrea mamillaris. Castelnau, Terr. Sil. de l'Amer. du Nord., pl. 24, fig. 5.
  1851. Lithostrotion mamillare. Milne-Edwards and Haime, Monog. des Polyp. Foss., p. 433, pl. 13, figs 1-1b.
  - Carboniferous: Mount Fletcher, Alabama; Eddyville, Kentucky; Cumberland Mountains, Tennessee; Charlotte, Tennessee; Harding County, Indiana; Washington County and Cumberland River, Tennessee; Cabell Cey, Virginia; Warsaw, Illinois.
- 1852. Lithostrotion basaltiforme. Owen, Geol. Surv. Wis., Iowa, and Minn., tab. 4, figs. 5, 5a, 6.
  - Upper Series of Carboniferous L. S.: Sweet Home, on the Des Moines River.
- 1858. Lithostrotion mamillare. Hall, Geol. Iowa, vol. 1, pt. 2, p. 667, pl. 24, figs. 5a, b.
  - St. Louis L. S.: Mount Pleasant, Iowa; St. Francisville, Missouri; Warsaw, Johnson's Landing, Milan, Alton, and Prairie du Rocher, Illinois; Elliotsville, Indiana; Kentucky, Tennessee, and Alabama.
- 1858. Lithostrolion proliferum. Hall, Geol. Iowa, vol. 1, pt. 2, p. 668, pl. 24, figs. 6a-c.
  - St. Louis L. S.: Johnson's Landing, and Milan, Illinois.
- 1860. Lithostrotion mamillure. Milne-Edwards, Hist. Nat. Corr., vol. 3, p. 423. Carboniferous: North America.
- 1862. Lithostrotion Canadense. Owen, Geol. Reconn. Ind., p. 364, fig. 6. Carboniferous: Lost River, Orange County, Indiana.
- 1864. Lithostrotion mamillare (?) Meek, Pal. Cal., vol. 1, p. 5, pl. 1, figs. 4-45. Carboniferous: Bass's Ranch, Shasta County, California.
- 1876. Lithostrotion mamillare. Rominger, Geol. Surv. Mich., vol. 3, pt. 2, p. 111, pl. 55, 2 figs.
  Carboniferous L. S.: Wildfowl Bay, Bellevue, and Grand Rapids, Mich.
- 1880. Lithostrotion mamillare. White, Cont. to Inv. Pal., No. 8, p. 159, pl. 40,
- 1880. Lithostrotion mamillars. White, Cont. to Inv. Pal., No. 8, p. 159, pl. 40, figs. 6a, b.

  St. Louis Group: Monroe County, Indiana.
- 1881. Lithostrotion mamillare. White, 2d Ann. Rep. Dep. Stat. and Geol. Ind., p. 506, pl. 6, figs. 1, 2.
  Subcarboniferous: Monroe County, Indiana.
- 1882. Lithostrotion mamillare. White, 11th Rep. Geol. Surv. Ind., p. 401, pl. 52, fig. 3.
  - St. Louis Group: Indiana.
- 1894. Lithostrotion mamillare. Keyes, Mo. Geol. Surv., vol. 4, p. 106, pl. 12, fig. 8.
- St. Louis L. S.: St. Francisville, Ste. Genevieve, and St. Louis, Missouri.
- Lithostrotion harmodites Milne-Edwards and Haime.
  - 1851. Lithostrotion harmodites. Milne-Edwards and Haine, Monog. des polyp., Foss., p. 440, pl. 15, figs. 1, 1a. Carboniferous: North America.

## Lithostrotion junceum Fleming.

1828. Caryophyllea juncoa. Fleming, Brit. Anim., p. 509.

1878. Lithostrotion junceum. Ethridge, Quart. Jour. Geol. Soc. Lond., vol. 34, p. 610.

Carboniferous: Feilden Isthmus, Latitude 82° 43'.

## Lithostrotion mamillare Castelnau. See Lithostrotion canadense.

## Lithostrotion microstylum White.

1880. Lithostrotion microstylum. White, Cont. to Inv. Psl., No. 8, p. 159, pl. 40, fig. 7a.

Top of Chouteau L. S.: Sedalia, Missouri.

1894. Lithostrotion microstylum. Keyes, Mo. Geol. Surv., vol. 4, p. 124. Chouteau L. S.: Sedalia, Missouri.

#### Lithostrotion pictoense Billings.

1868. Lithostrotion Pictoense. Billings, Dawson's Acad. Geol., p. 285, fig. 83. Carboniferous L. S.: East River, Pictou.

Lithostrotion proliferum Hall. See Lithostrotion canadense.

#### Lithostrotion stokesi Milne-Edwards and Haime.

1851. Lithostrotion stokesi. Milne-Edwards and Haime, Monog. des Polyp. Foss., p. 440, pl. 20, fig. 2.

Carboniferous: Lake Winnipeg, North America.

1860. Lithostrotion Stokesi. Milne-Edwards, Hist. Nat. Corr., vol. 3, p. 429. Carboniferous: Lake Winnipeg, North America.

## Lithostrotion whitneyi Meek.

1877. Lithostrotion Whitneyi. Meek, U.S. Geol. Expl., 40 Par., vol. 4, p. 58, pl. 6, figs. 1, 1c.

Carboniferous L. S.: Boxelder Peak, Wasatch Range, Utah.

1877. Lithostrotion Whitneyi. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 103, pl. 6, figs. 1a-c.

Carboniferous: Fossil Hill and Ice Creek, Steptoe Valley, White Pine County, Nevada.

#### Lithostrotion (species undetermined).

1852. Lithostrotion —— (sp. undet). Hall, Stansb. Exped. Gt. Salt Lake, p. 408, pl. 1, figs. 4a, b.

Carboniferous: Top of Stansbury's Island, Great Salt Lake, Utah.

1864. Lithostrotion —— f Meek, Pal. Cal., vol. 1, p. 7, pl. 1, figs. 3, 3a. Carboniferous: Bass's Ranch, Shasta County, California.

1876. Lithostrotion —— ? White, Powell's Geol. Rep. Uinta Mts., p. 88.
Lower Aubrey Group: York, Utah; west base of Wasatch Range.

#### (LITTORINA Ferussac, 1821.)

Littorina wheeleri. See Trachydomia wheeleri.

#### LOBOCRINUS Wachsmuth and Springer, 1897.

## Lobocrinus æquibrachiatus McChesney.

1860. Actinocrinus aquibrachiatus. McChesney, Desc. New. Pal. Foss., p. 25. Burlington L. S.: Monmouth, Illinois.

1865. Actinocrinus aquibrachiatus. McChesney, Ill. New Spec. Foss., pl. 4, figs. 2a-b, 5a-b, pl. 10, fig. 1.

1868. Actinocrinus aequibrachiatus. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 18, pl. 4, figs. 2, 5.

Burlington L. S.: Monmouth, Illinois.

#### Lobocrinus æquibrachiatus McChesney—Continued.

1897. Lobocrinus æquibrachiatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 440, pl. 29, figs. 8a, b; pl. 46, figs. 6a, b. Upper Burlington L. S.: Burlington, Iowa.

## Lobocrinus æquibrachiatus var. asteriscus Meek and Worthen.

- 1860. Actinocrinus asteriscus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 385.
  - Burlingtoh L. S.: Cedar Creek, Warren County, Illinois.
- 1861. Actinocrinus equibrachiatus var. alatus. Hall, Desc. New Spec. Crin., p. 1. Burlington L. S.
- 1861. Actinocrinus equibrachiatus var. alatus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 263.

Burlington L. S.: Burlington, Iowa.

1866. Actinocrinus asteriscus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 207, pl. 15, figs. 8a-c.

Burlington L. S.: Burlington, Iowa.

- 1872. Actinocrinus equibrachiatus var. alatus. Hall, Photo. Plates of Crinoids, pl. 3, figs. 21-23.
- 1893. Batocrinus aequibrachiatus var. alatus. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 11, pl. 1, fig. 14.
  Burlington L. S.: Burlington, Iowa.
- 1894. Batocrinus æquibrachiatus. Keyes, Mo. Geol. Surv., vol. 4, p. 181. Burlington L. S.: White Ledge, Marion County, Missouri.
- 1897. Lobocrinus æquibrachiatus var. asteriscus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 441, pl. 29, figs. 9a, b. Upper Burlington L. S.: Burlington. Iowa.

#### Lobocrinus hageri McChesney.

- 1860. Actinocrinus hageri. McChesney, Disc. New Pal. Foss., p. 28. Burlington L. S.: Burlington, Iowa.
- 1865. Actinocrinus Hageri. McChesney, Ill. New Spec. Foss., pl. 4, fig. 1, pl. 10, fig. 3.
- 1868. Actinocrinus Hageri. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 21, pl. 4, fig. 1.

Burlington L. S.: Burlington, Iowa.

- 1897. (†) Lobocrinus Hageri. Wachsmuth and Springer, N. Am. Crin. Cam., p. 445, pl. 30, figs. 9, 10.
  - Upper Burlington L.S.: Burlington, Iowa.

## Lobocrinus inflatus Rowley and Hare.

1891. Batocrinus inflatus. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 102, pl. 2, fig. 19.

Lower Burlington L. S.: Louisiana, Missouri.

1891. Batocrinus bulbosus. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 114, pl. 3, fig. 5.

Lower Burlington L.S.: Louisiana, Missouri.

- 1897. Lobocrinus inflatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 444, pl. 34, figs. 18a, b.
  - Lower Burlington L. S.: Louisiana, Missouri.

#### Lobocrinus longirostris Hall.

- 1858. Actinocrinus longirostris. Hall, Geol. Iowa, vol. 1, pt. 2, p. 589, pl. 11, figs. 2
  4c, d.
  - Burlington L.S.: Burlington, Iowa.
- 1868. Batocrinus Cassedayanus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 353.
  - Lower Burlington L. S.: Burlington, Iowa.

#### Lobocrinus longirostris Hall—Continued.

- 1873. Batocrinus Cassedayanus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 370, pl. 5, fig. 1.
  - Burlington L. S.: Burlington, Iowa.
- 1894. Batocrinus longirostris. Keyes, Mo. Geol. Surv., vol. 4, p. 180, pl. 24, fig. 5.
  Lower Burlington L. S.: Sedalia, Hannibal, and Louisiana, Missouri.
- 1897. Lobocrinus longirostris. Wachsmuth and Springer, N. Am. Crin. Cam., p. 442, pl. 28, figs. 1a-e.

Lower Burlington L. S.: Burlington, Iowa; Missouri.

#### Lobocrinus nashvillæ Hall.

1858. Actinocrinus nashvillæ. Hall, Geol. Iowa, vol. 1, pt. 2, p. 609, pl. 15, fig. 4, pl. 16, figs. 4a, b.

Keokuk L. S.: Warsaw, Illinois; White Creek Springs, Tennessee.

- 1890. Batocrinus nashvilla. Worthen, Geol. Surv. Ill., vol. 8, p. 85, pl. 13, fig. 5. Keokuk L. S.: Keokuk, Iowa.
- 1894. Batucrinus nashrilla. Keyes, Mo. Geol. Surv., vol. 4, p. 183.
- Keokuk L. S.: St. Francisville and Palmyra, Missouri; Keokuk, Iowa.
- 1897. Lobocrinus Nashrilla. Wachsmuth and Springer, N. Am. Crin. Cam., p. 435, pl. 31, fig. 1.

Keokuk L. S.: White's Creek Springs, near Nashville, Tennessee; Button-mould Knob, Kentucky; Keokuk, Iowa; Warsaw and Nauvoo, Illinois.

#### Lobocrinus nashvillae var. subtractus White.

1862. Actinocrinus Nashrillæ var. subtractus. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 16.

Upper Burlington L. S.: Burlington, Iowa.

1894. Batocrinus subtractus. Keyes, Mo. Geol. Surv., vol. 4, p. 183. Burlington L. S.: Hannibal, Missouri.

1897. Lobocrinus Nashvillæ var. subtractus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 436, pl. 31, figs. 2a, b.

Burlington L. S. and Burlington-Keokuk transition bed: Des Moines County, Iowa; Henderson County and Nauvoo, Illinois.

#### Lobocrinus pyriformis Shumard.

- 1855. Actinocrinus pyriformis. Shumard, Geol. Rep. Mo., p. 192, pl. A, figs. 6a, b. Encrinital L. S.: Near Palmyra, Marion County, Missouri.
- 1860. Actinocrinus pyriformis. Hall, Supp. vol. 1, pt. 2, Geol. Rep. lowa, pl. 2, fig. 8.
- 1861. Actinocrinus pyriformis var. rudis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 131.
  - Chouteau L. S.: Salt Lick Point, Monroe County, Illinois.
- 1865. Actinocrinus pistilliformis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 153.
- 1866. Actinocrinus pistilliformis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 151, pl. 14, tig. 8.
  Kınderhook Group: Salt Lick Point, Marion County, Illinois.
- 1873. Batocrinus pyriformis. Meek and Worthen, Geol. Surv. III., vol. 5, p. 375, pl. 5, fig. 5.
  - Burlington L. S.: Burlington, Iowa; Marion County, Missouri; Illinois.
- 1874. Batocrinus pyriformis. Meek, Am. Jour. Sci. (3), vol. 7, p. 192.
- 1889. Batocrinus pistilliformis. Rowley, Am. Geol., vol. 3, p. 276. Upper Burlington L. S.: Louisiana and Curryville, Missouri.
- 1894. Batocrinus pyriformis. Keyes, Mo. Geol. Surv., vol. 4, p. 182, pl. 23, fig. 7.
  Upper Burlington L. S.: Helton, Haunibal, Louisiana, Palmyra, and Ash Grove, Missouri.
- Lobocrinus pyriformis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 437, pl. 31, figs. 3a-e.
  - Upper Burlington L. S.: Iowa, Illinois, Missouri.

## Lobocrinus robustus Wachsmuth and Springer.

1897. Lobocrinus robustus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 436, pl. 30, figs. 8a, b.

Keokuk Group: White's Creek Springs, Tennessee.

#### Lobocrinus spiniferus Wachsmuth and Springer.

1897. Lobocrinus spiniferus. Wachsmuth and Springer, N. Am. Crin. Cam., p 439, pl. 30, figs. 11, 12.

Keokuk Group: Indian Creek, Montgomery County, Indiana.

#### Lobocrinus vandelli Shumard.

\*1857. Actinocrinus Yandelli. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 76, pl. 1, figs. 4a, b.

1897. Lobocrinus Yandelli. Wachsmuth and Springer, N. Am. Crin. Cam., p. 441, pl. 30, figs. 7a, b.

Keokuk Group: Button-mould Knob, Kentucky.

#### LOFTUSIA Carpenter and Brady, 1869.

#### Loftusia columbiana Dawson.

1879. Loftusia columbiana. Dawson, Quart. Jour. Geol. Soc. Lond., vol. 35, p. 74, pl. 6, figs. 1-7.

Carboniferous L. S.: Marble Canyon, British Columbia.

#### LOPHOPHYLLUM Milne-Edwards and Haime.

# Lophophyllum calceola White and Whitfield. See Zaphrentis calceola. Lophophyllum expansum White.

1876. Lophophyllum expansum. White, Proc. Acad. Nat. Sci. Phil., p. 27. Keokuk L. S.: Henry County, Iowa.

1880. Lophophyllum expansum. White, Cont. to Inv. Pal., No. 8, p. 157, pl. 39, figs. 4a, b.

Keokuk L. S.: Henry County, Iowa.

#### Lophophyllum profundum Milne-Edwards and Haime.

1851. Cyathaxonia profunda. Milne-Edwards and Haime, Monog. des Polyp. Foss., p. 323.

Carboniferous: Flint Ridge, Ohio.

1860. Cyathaxonia profunda. Milne-Edwards, Hist. Nat. Corr., vol. 3, p. 331. Carboniferous: Ohio.

1860. Cyathaxonia prolifera. McChesney, Desc. New Pal. Foss., p. 75.
Coal Measures: Widely distributed in the Western States.

1865. Cyatharonia prolifera. McChesney, Ill. New Spec. Foss, pl. 2, figs. 1-3.

1866. Cyathaxonia (†) sp. Geinitz, Carb. und Dyas in Nebr., p. 65, 66, tab. 5, figs. 3, 4.

Plattsmouth, Nebraska.

1868. Cyatharonia prolifera. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 1, pl. 2, figs. 1-3.
 Coal Measures: Springfield, Illinois.

1872. Lophophyllum proliferum. Mcck, U. S. Geol. Surv. Nebr., p. 149, pl. 5, figs 4a, b.

Upper Coal Measures: Nebraska City and Rock Bluff, Nebraska; Spring-field and Lasalle, Illinois; Texas.

1873. Lophophyllum proliferum. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 560, pl. 24, fig. 1.

Upper Coal Measures: Springfield, Illinois.

1876. Lophophyllum proliferum. White, Powell's Geol. Rep. Uinta Mts., p. 88. Lower Aubrey Group: Confluence of Grand and Green rivers, Utah.

## Lophophyllum profundum Milne-Edwards and Haime—Continued.

1884. Lophophyllum proliferum. White, 13th Rep. Geol. Surv. Ind., p. 118, pl. 23, figs. 6, 7.

Coal Measures: Indiana; Illinois; Iowa.

1887. Cyathaxonia prolifera. Foerste, Bull. Den. Univ., vol. 2, p. 86, pl. 7, figs. 15a-c.

Coal Measures: Flint Ridge and Bald Hill, Ohio.

1888. Lophophyllum profunda. Foerste, Bull. Den. Univ., vol. 3, p. 136.
Coal Measures: Flint Ridge, Ohio.

1888. Lophophyllum proliferum. Keyes, Proc. Acad. Nat. Sci. Phil., p. 225.
Lower Coal Measures: Des Moines, Iowa.

1890. Lophophyllum profundum. Worthen, Geol. Surv. Ill., vol. 8, p. 79, pl. 10, figs. 14, 14a.
Coal Measures: Lasalle, Illinois.

1894. Lophophyllum proliferum. Keyes, Mo., Geol. Surv., vol. 4, p. 115, pl. 13, figs. 8a, b.
Upper Coal Measures: Kansas City, Missouri.

1897. Lophophyllum proliferum. Smith, Proc. Am. Phil. Soc., vol. 35, p. 25. Upper Coal Measures: Poteau Mountain, Indian Territory.

#### Lophophyllum profundum var. sauridens White.

1877. Lophophyllum proliferum var. sauridens. White, U. S. Geol. Surv. W. 100 Merid., vol. 4, p. 101, pl. 6, figs. 4a, d.

Carboniferous: Near Santa Fé, New Mexico; Rock Creek, Lake County, Colorado.

Lophophyllum proliferum McChesney. See Lophophyllum profundum.

Lophophyllum proliferum var. sauridens White. See Lophophyllum profundum var. sauridens.

#### Lophophyllum (species undetermined).

1888. Lophophyllum sp. Herrick, Bull. Den. Univ., vol. 4, pl. 11, fig. 17. Chester Group: Ohio.

#### LOXONEMA Phillips, 1841.

#### Loxonema acutulum Dawson.

1868. Loxonema acutula. Dawson, Acad. Geol., p. 309. Carboniferous L. S.: Windsor, Nova Scotia.

#### Loxonema attenuatum Stevens.

1858. Chemnitzia attenuata. Stevens, Am. Jour. Sci. (2), vol. 25, p. 259.
Coal Measures: Danville, Illinois.

Loxonema attenuatum var. semicostatum Meek. See Loxonema semicostatum.

#### Loxonema bellum Walcott.

1884. Loxonema bella. Walcott, Bal. Eureka Dist., p. 258, pl. 24, figs. 1a, b. Lower Carboniferous: Eureka District, Nevada.

#### Loxonema cara Dawson.

1883. Loxonema cara. Dawson, Rep. Peter Redpath, Mus., No. 2, p. 11.

Lower Carboniferous L. S.: Windsor, Nova Scotia.

Loxonema carinatum. See Soleniscus carinatus.

#### Loxonema cerithiforme Meek and Worthen.

1860. Loxonema cerithiformis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 465.

Upper Coal Measures: Springfield, Ill.

#### Loxonema cerithiforme Meek and Worthen—Continued.

1866. Loxonema cerithiformis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 379, pl. 31, figs. 13a-c.

Upper Coal Measures: Springfield, Illinois.

## Loxonema danvillensis Stevens.

1858. Loronema Danvillensis. Stevens, Am. Jour. Sci. (2), vol. 25, p. 259. Coal Measures: Danville, Illinois.

#### Loxonema delphicola Hall.

1879. Loxonema delphicola. Hall, Pal. N. Y., vol. 5, pt. 2, p. 47, pl. 13, figs. 19-25; pl. 14, figs. 1, 2.

Hamilton Group: New York.

1888. Loxonema delphicola? Herrick, Bull. Den. Univ., vol 4, pl. 9, fig. 15. Bedford Shale: Central College, Ohio.

1889. Loxonema (cf. delphicola). Herrick, Am. Geol., vol. 3, pl. 4, fig. 15. Bedford Shale: Ohio.

1895. Loxonema delphicola. Herrick, Geol. Surv. Ohio, vol. 7, pl. 20, fig. 15. Shale above Berea Grit: Ohio.

#### Loxonema fasciatum King.

1850. Loxonema fasciata. King, Perm. Foss. Eng., p. 209, pl. 16, fig. 30.
1858. Loxonema fasciata. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 196. Lower Permian: Kansas.

#### Loxonema hallii Norwood and Pratten.

1855. Loronema Hallii. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 77, pl. 9, figs. 11a, b.

Coal Measures: Galatia, Illinois; and on Wabash River, 5 miles below New Harmony, Indiana.

Loxonema inornata. See Bulimorpha inornata.

Loxonema minutum. See Bulimorpha minuta.

## Loxonema multicostatum Meek and Worthen.

1861. Loronema multicostata. Meek and Worthen, Proc. Acad. Nat. Sci. Phil.,

Coal Measures: Hodge's Creek, Macoupin County, Illinois.

1866. Loxonema multicosta. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 378, pl. 31, figs. 12a-c.

Coal Measures: Macoupin County, Illinois.

1891. Loxonema multicosta. Keyes, Proc. Acad. Nat. Sci. Phil., p. 260. Lower Coal Measures: Des Moines, Iowa.

1894. Loxonema multicosta. Keyes, Mo. Geol. Surv., vol. 5, p. 206. Upper Coal Measures: Kansas City, Missouri.

Loxonema newberryi. See Soleniscus newberryi.

Loxonema nitidula. See Bulimorpha nitidula.

## Loxonema nodosum Stevens.

1858. Loronema nodosa. Stevens, Am. Jour. Sci. (2), vol. 25, p. 260. Coal Measures: Summit, Ohio.

## oxonema oligospira Winchell.

1863. Loxonema oligospira. Winchell, Proc. Acad. Nat. Sci. Phil., p. 22. Yellow S. S.: Burlington, Iowa.

#### Loxonema parvum Cox.

1857. Chimnitzia parva. Cox, Geol. Surv. Ky., vol. 3, p. 567, pl. 8, figs. 3, 3a. Coal Measures: Daviess County, Kentucky.

## Loxonema peoriense Worthen.

- 1884. Loxonema peoriense. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 7. Coal Measures: Peoria County, Illinois.
- 1890. Loxonema peoriense. Worthen, Geol. Surv., III., vol. 8, p. 139, pl. 23, figs. 10, 10b.

Coal Measures: Peoria County, Illinois.

## Loxonema plebium Herrick.

1887. Loxonema sp. Herrick, Bull. Den. Univ., vol. 2, p. 147, pl. 14, fig. 8. (L. ple-bium (n. sp.) in explanation of plate.)
Coal Measures: Flint Ridge, Ohio.

## Loxonema plicatum Whitfield.

1882. Loxonema plicatum. Whitfield, Ann. N. Y. Acad. Sci., vol. 2, p. 231. Coal Measures: Carbon Hill, Hocking County, Ohio.

1891. Lozonema plicatum. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 601, pl. 15, figs. 14, 15.

Coal Measures: Carbon Hill, Hocking County, Ohio.

1895. Loxonema plicatum. Whitfield, Geol. Surv. Ohio, vol. 7, p. 486, pl. 11, figs. 14, 15.

Coal Measures: Hocking County, Ohio,

#### Loxonema politum Stevens.

1858. Loxonema polita. Stevens, Am. Jour. Sci. (2), vol. 25, p. 260. Coal Measures: Danville, Illinois.

Loxonema quadricarinatum. See Murchisonia quadricarinata.

Loxonema regularis. See Soleniscus regularis.

## Loxonema rugosum Meek and Worthen.

1860. Loxonema rugosa. Meek and Worthen, Proc. Aca l. Nat. Sci., Phil., p. 465. Upper Coal Measures: Springfield, Illinois.

1866. Loxonema rugosa. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 378, pl. 31, figs. 11a-c.

Upper Coal Measures: Springfield, Illinois.

1881. Loxonema rugosa. White, U. S. Geog. Surv. W. 100 Merid., vol. 3, Supp., Appendix, p. xxxv, pl. 3, fig. 7a.
Carboniferous: Near Taos, and Coyote Creek, New Mexico.

#### Loxonema scitulum Meek and Worthen.

1860. Loronema scitula. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 464. Upper Coal Measures: Springfield, Illinois.

1866. Loxonema scitula. Meek and Worthen, Geol. Surv. III., vol. 2, p. 377, pl. 31, figs. 10a-c.

Lower Coal Measures: Hodge's Creek, Macoupin County, Illinois.

1891. Loronema scitula. Keyes, Proc. Acad. Nat. Sci. Phil., p. 259. Lower Coal Measures: Des Moines, Iowa.

1894. Loxonema scitulum. Keyes, Mo. Geol. Surv., vol. 5, p. 206.

Upper Coal Measures: Kansas City, Missouri.

#### Loxonema semicostata Meek.

1871. Loxonema attenuata var. semicostatus. Meek, Proc. Acad. Nat. Sci. Phil., p. 174.

Coal Measures: Danville, Illinois.

1873. Loronema semicostata. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 596, pl. 29, fig. 2.
 Coal Measures: Danville, Illinois.

## Loxonema swallovanum Shumard.

1859. Chemnitzia Swalloviana. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 399.
White Permian L. S.: Guadalupe Mountains.

#### Loxonema tenuicarinatum Stevens.

1858. Lozonema tenui-carinata. Stevens, Am. Jour. Sci. (2), vol. 25, p. 260. Coal Measures: Summit, Ohio.

#### Loxonema tenuilineatum Shumard.

1855. Chemnitzia tenuilineata. Shumard, Geol. Rep. Mo., p. 207, pl. C, fig. 12. Chouteau L. S.: Cooper County, Missouri.

1894. Loxonema tenuilineatum. Keyes, Mo. Geol. Surv., vol. 5, p. 206. Chouteau L. S.: Chouteau Springs, Missouri.

#### Loxonema turritiforme Hall.

1860. Lozonema turritiformis. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 109. Goniatite L. S.: Rockford, Indiana.

#### Loxonema vincta. See Murchisonia vincta.

## Loxonema vandellanum Hall.

1856. Loxonema Yandellana. Hall, Trans. Albany Inst., vol. 4, p. 28.
St. Louis L. S.: Spergen Hill, Indiana.

1882. Loxonema Yandellana. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 77, pl. 8, figs. 35, 36.

St. Louis Group: Spergen Hill, Indiana.

1883. Lozonema yandellana. Hall, 12th Rep. Geol. Surv. Ind., p. 365, pl. 31, figs. 35, 36.

St. Louis Group: Spergen Hill, Indiana.

1888. Loxonema yandellana? Herrick, Bull. Den. Univ., vol. 3, p. 86, pl. 8, fig. 23. Waverly Group: Licking County, Ohio.

#### Loxonema (species undetermined).

1873. Lozonema (sp. undet.). Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 29, figs. 3a, b.

Coal Measures.

1873. Lozonema (Michelia?) (sp. undet.). Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 29, figs. 4a, b. Coal Measures.

1887. Loxonema sp. Herrick, Bull. Den. Univ., vol. 2, p. 22, pl. 3, fig. 2. Coal Measures: Flint Ridge, Ohio.

1888. Lozonema sp. Herrick, Bull. Den. Univ., vol. 4, pl. 7, fig. 7. Waverly Group: Newark, Ohio.

1895. Loxonema sp. Herrick, Geol. Surv. Ohio, vol. 7, pl. 18, fig. 7. Kinderhook: Granville, Ohio.

### LUNULICARDIUM Munster, 1840.

#### Lunulicardium retrorsum Miller and Gurley.

1896. Lunulicardium retrorsum. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 6, pl. 2, figs. 26-28.

Chouteau L. S.: Near Sedalia, Missouri.

#### (LYONSIA Turton, 1822.)

#### Lyonsia concava. See Sedgwickia concava.

#### LYRIOPECTEN Hall, 1884.

#### Lyriopecten nodocostatus Herrick.

1888. Lyriopecten nodocostatus. Herrick, Bull. Den. Univ., vol. 4, p. 32, pl. 11, fig. 5. Waverly Group: Licking and Richland counties, Ohio.

1895. Lyriopecten nodocostatus. Herrick, Geol. Surv. Ohio, vol. 7, pl. 22, fig. 27. Cuyahoga Shale: Licking County, Ohio.

Ball. 153----22

## Loxonema peoriense Worthen.

- 1884. Loxonema peoriense. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 7. Coal Measures: Peoria County, Illinois.
- 1890. Loxonema peoriense. Worthen, Geol. Surv., Ill., vol. 8, p. 139, pl. 23, figs. 10, 10b.

Coal Measures: Peoria County, Illinois.

## Loxonema plebium Herrick.

1887. Loxonema sp. Herrick, Bull. Den. Univ., vol. 2, p. 147, pl. 14, fig. 8. (L. ple-bium (n. sp.) in explanation of plate.)

Coal Measures: Flint Ridge, Ohio.

## Loxonema plicatum Whitfield.

1882. Loxonema plicatum. Whitfield, Ann. N. Y. Acad. Sci., vol. 2, p. 231.
Coal Measures: Carbon Hill, Hocking County, Ohio.

1891. Losonema plicatum. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 601, pl. 15, figs. 14, 15.

Coal Measures: Carbon Hill, Hocking County, Ohio.

1895. Lozonema plicatum. Whitfield, Geol. Surv. Ohio, vol. 7, p. 486, pl. 11, figs. 14, 15.

Coal Measures: Hocking County, Ohio.

## Loxonema politum Stevens.

1858. Loxonema polita. Stevens, Am. Jour. Sci. (2), vol. 25, p. 260. Coal Measures: Danville, Illinois.

## Loxonema quadricarinatum. See Murchisonia quadricarinata.

Loxonema regularis. See Soleniscus regularis.

#### Loxonema rugosum Meek and Worthen.

1860. Loxonema rugosa. Meek and Worthen, Proc. Aca I. Nat. Sci., Phil., p. 465. Upper Coal Measures: Springfield, Illinois.

1866. Loxonema rugosa. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 378, pl. 31, figs. 11a-c.

Upper Coal Measures: Springfield, Illinois.

1881. Loxonema rugosa. White, U. S. Geog. Surv. W. 100 Merid., vol. 3, Supp., Appendix, p. xxxv, pl. 3, fig. 7a.

Carboniferous: Near Taos, and Coyote Creek, New Mexico.

#### Loxonema scitulum Meek and Worthen.

1860. Loxonema scitula. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 464. Upper Coal Measures: Springfield, Illinois.

1866. Loxonema scitula. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 377, pl. 31, figs. 10a-c.

Lower Coal Measures: Hodge's Creek, Macoupin County, Illinois.

1891. Loronema scitula. Keyes, Proc. Acad. Nat. Sci. Phil., p. 259. Lower Coul Measures: Des Moines, Iowa.

1894. Loxonema scitulum. Keyes, Mo. Geol. Surv., vol. 5, p. 206. Upper Coal Measures: Kansas City, Missouri.

#### Loxonema semicostata Meek.

1871. Loxonema attenuata var. semicostatus. Meek, Proc. Acad. Nat. Sci. Phil., p. 174.

Coal Measures: Danville, Illinois.

1873. Loxonema semicostata. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 596, pl. 29, fig. 2.

Coal Measures: Danville, Illinois.

#### Loxonema swallovanum Shumard.

1859. Chemnitzia Swalloriana. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 399. White Permian L. S.: Guadalupe Mountains.

#### Loxonema tenuicarinatum Stevens.

1858. Loxonema tenui-carinata. Stevens, Am. Jour. Sci. (2), vol. 25, p. 260.
Coal Measures: Summit. Ohio.

#### Loxonema tenuilineatum Shumard.

- 1855. Chemnitzia tenuilineata. Shumard, Geol. Rep. Mo., p. 207, pl. C, fig. 12. Chouteau L. S.: Cooper County, Missouri.
- 1894. Loxonema tenuilineatum. Keyes, Mo. Geol. Surv., vol. 5, p. 206. Chouteau L. S.: Chouteau Springs, Missouri.

#### Loxonema turritiforme Hall.

1860. Loxonema turritiformis. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 109. Goniatite L. S.: Rockford, Indiana.

Loxonema vincta. See Murchisonia vincta.

## Loxonema yandellanum Hall.

- 1856. Loxonema Yandellana. Hall, Trans. Albany Inst., vol. 4, p. 28.
  St. Louis L. S.: Spergen Hill, Indiana.
- 1882. Loxonema Yandellana. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 77, pl. 8, figs. 35, 36.

St. Louis Group: Spergen Hill, Indiana.

- 1883. Lozonema yandellana. Hall, 12th Rep. Geol. Surv. Ind., p. 365, pl. 31, figs. 35, 36.
  - St. Louis Group: Spergen Hill, Indiana.
- 1888. Loxonema yandellana? Herrick, Bull. Den. Univ., vol. 3, p. 86, pl. 8, fig. 23. Waverly Group: Licking County, Ohio.

## Loxonema (species undetermined).

1873. Loxonema (sp. undet.). Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 29, figs. 3a, b.

Coal Measures.

- 1873. Loxonema (Michelia?) (sp. undet.). Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 29, figs. 4a, b. Coal Measures.
- 1887. Lozonema sp. Herrick, Bull. Den. Univ., vol. 2, p. 22, pl. 3, fig. 2.
  Coal Measures: Flint Ridge, Ohio.
- 1888. Lozonema sp. Herrick, Bull. Den. Univ., vol. 4, pl. 7, fig. 7. Waverly Group: Newark, Ohio.
- 1895. Lozonema sp. Herrick, Geol. Surv. Ohio, vol. 7, pl. 18, fig. 7. Kinderhook: Granville, Ohio.

#### LUNULICARDIUM Munster, 1840.

## Lunulicardium retrorsum Miller and Gurley.

1896. Lunulicardium retrorsum. Miller and Gurley, Bull. No. 11, Ill. State Mus.
Nat. Hist., p. 6, pl. 2, figs. 26-28.

Chouteau L. S.: Near Sedalia, Missouri.

## (LYONSIA Turton, 1822.)

Lyonsia concava. See Sedgwickia concava.

## LYRIOPECTEN Hall, 1884.

#### Lyriopecten nodocostatus Herrick.

- 1888. Lyriopecten nodocostatus. Herrick, Bull. Den. Univ., vol. 4, p. 32, pl. 11, fig. 5. Waverly Group: Licking and Richland counties, Ohio.
- 1895. Lyriopecten nodocostatus. Herrick, Geol. Surv. Ohio, vol. 7, pl. 22, fig. 27. Cuyahoga Shale: Licking County, Ohio.

#### Bull. 153----22

#### Macrocrinus gemmiformis Hall.

- 1860. Actinocrinus gemmiformis. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 23. Burlington L. S.: Burlington, Iowa.
- 1872. Actinocrinus gemmiformis. Hall, Photo. Plates of Crin., pl. 3, fig. 6.
- 1897. Macrocrinus gemmiformis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 449, pl. 36, fig. 8.

Lower Burlington L. S.: Burlington, Iowa.

#### Macrocrinus jucundus Miller and Gurley.

- 1890. Batorinus juoundus. Miller and Gurley, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 20, pl. 4, figs. 5, 6.
  Keokuk Group: Crawfordsville, Indiana.
- 1890. Batocrinus juoundus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 341, pl. 4, figs. 5, 6.
  Keokuk Group: Crawfordsville, Indiana.
- 1891. Batocrinus agnatus. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 53, pl. 8, figs. 1, 2.

Keokuk Group: Indian Creek, Montgomery County, Indiana.

- 1892. Batocrinus agnatus. Miller, 17th Rep. Geol. Surv. Ind., p. 663, pl. 8, figs. 1, 2. Keokuk Group: Indian Creek, Montgomery County, Indiana.
- 1897. Macroorinus jucundus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 451, pl. 30, figs. 13, 14.
  Keokuk Group: Indian Creek, Montgomery County, Indiana.

#### Macrocrinus konincki Shumard.

- 1855. Actinocrinus Konincki. Shumard, Geol. Rep. Mo., p. 195, pl. A, figs. 8a-e. Encrinital L. S.: Rocheport, Boone County; near Palmyra, Marion County, Missouri.
- 1860. Actinocrinus urnæformis. McChesney, Desc. New Pal. Foss., p. 23. Burlington L. S.: Honey Creek, Illinois.
- 1894. Eretmoorinus koninoki. Keyes, Mo. Geol. Surv., vol. 4, p. 178. Upper Burlington L. S.: Ash Grove, Rocheport, and Palmyra, Missouri.
- 1897. Macrocrinus Konincki. Wachsmuth and Springer, N. Am. Crin. Cam., p. 447, pl. 35, figs. 1-3.

Upper Burlington L. S.: Burlington, Iowa.

#### Macrocrinus lagunculus Hall.

- 1860. Actinocrinus lagunoulus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 41. Keokuk L. S.: Warsaw, Illinois.
- 1897. Macroorinus lagunculus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 453, pl. 35, fig. 4.
  Keokuk Group: Warsaw, Illinois; Keokuk, Iowa.

#### Macrocrinus verneuilianus Shumard.

- 1855. Actinocrinus Vernouilianus. Shumard, Geol. Rep. Mo., p. 193, pl. A, figs. 1a, b.
  - Encrinital L. S.: Rocheport and near Palmyra, Missouri.
- 1873. Batoorinus vernouillanus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 379, pl. 4, figs. 3, 4.
  - Burlington L. S.: Sagetown, Illinois; Burlington, Iowa.
- 1894. Eretmoorinus verneuilianus. Keyes, Mo. Geol. Surv., vol. 4, p. 177, pl. 23, fig. 9.
  Upper Burlington L. S.: Lagrange, Palmyra, Helton, Hannibal, Louisiana,
- Ste. Genevieve, Rocheport, Springfield, and Ash Grove, Missouri.

  1897. Macrocrinus vernouilianus. Wachsmuth and Springer, N. Am. Crin. Cam.,
  p. 450, pl. 30, figs. 15-18.
  - Upper Burlington L. S.: Iowa, Illinois, Missouri.

## MACRODON Lycett, 1845.

## Macrodon blairi Miller and Gurley.

1896. Macrodon blairi. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 11, pl. 2, figs. 19-24.

Chouteau L. S.: Near Sedalia, Missouri.

#### Macrodon carbonarius Cox.

1857. Arca carbonaria. Cox, Geol. Surv. Ky., vol. 3, p. 567, pl. 8, fig. 5.
Coal Measures: Providence, Hopkins County, Kentucky; near Hawesville,
Hancock County, Kentucky.

1887. Macrodon carbonaria. Herrick, Bull. Den. Univ., vol. 2, p. 32, pl. 4, figs. 21, 14.

Coal Measures: Flint Ridge, Ohio.

1897. Macrodon carbonarius. Smith, Proc. Am. Phil. Soc., vol. 35, p. 34. Lower Coal Measures: Conway County, Arkansas.

#### Macrodon cochlearis Winchell.

1863. Macrodon cochlearis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 16. Yellow S. S.: Burlington, Iowa.

#### Macrodon curtus Hartt.

1868. Macrodon curtus. Hartt, Dawson's Acad. Geol., p. 302. Carboniferous L. S.; Windsor, etc., Nova Scotia.

#### Macrodon delicatus Meek and Worthen.

1870. Macrodon delicatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 40. Upper Coal Measures: Springfield, Illinois.

1873. Macrodon delicatus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 575, pl. 26, fig. 3.

Upper Coal Measures: Springfield, Illinois.

#### Macrodon facetus Miller and Gurley.

1896. Macrodon facetus. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 10, pl. 1, figs. 14-16.
Chouteau L. S.: Near Sedalia, Missouri.

Chouseau D. S. . Mear Sectatia, Mi

#### Macrodon hamiltoniss Hall.

1884. Macrodon Hamiltonae. Walcott, Pal. Eureka Dist., p. 243, pl. 23, figs. 5-5c. Lower Carboniferous: Eureka District, Nevada.

1888. Macrodon hamiltonæ. Herrick, Bull. Den. Univ., vol. 4, pl. 9, fig. 3. Bedford Shale: Central College, Ohio.

1889. Macrodon hamiltonæ. Herrick, Am. Geol., vol. 3, pl. 4, fig. 4. Bedford Shale: Ohio.

1895. Macrodon hamiltonæ. Herrick, Geol. Surv. Ohio, vol. 7, pl. 20, fig. 4. Bedford Shale: Central College, Ohio.

#### Macrodon hardingi Dawson.

1868. Macrodon Hardingi. Dawson, Acad. Geol., p. 302, figs. a-c. Carboniferous L. S.: Windsor, Nova Scotia.

#### Macrodon micronema Meek and Worthen.

1866. Macrodon micronema. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 261. Chester Group: Ste. Genevieve County, Missouri; Randolph County, Illinois.

#### Macrodon newarkensis Herrick.

1888. Macrodon newarkensis. Herrick, Bull. Den. Univ., vol. 4, p. 36, pl. 4, fig. 19.

Waverly Group: Near Newark, Ohio.

1889. Macrodon newarkensis. Herrick, Am. Geol., vol. 3, pl. 2, fig. 19.

1895. Macrodon newarkeneis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 16, fig. 19.
Burlington and Keokuk: Newark, Ohio.

#### Macrodon obsoletus Meek.

- \*1871. Macrodon obsoletus. Meek, Rep. Regents Univ. W. Va. Lower Coal Measures: Monongahela County, West Virginia.
- 1875. Macrodon obsoletus. Meek, Pal. Ohio, vol. 2, p. 334, pl. 19, fig. 9. Coal Measures: Newark, Ohio.
- 1886. Macrodon obsoletus. Heilprin, 2d Geol. Surv. Penn. Ann. Rep. 1885, p. 456, fig. 19.
- Mill Creek, L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.

  1886. Macrodon obsoletus. Heilprin, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 275, fig. 19.
  - Mill Creek, L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.
- 1887. Macrodon obsoletus. Herrick, Bull. Den. Univ., vol. 2, p. 31, pl. 4, fig. 19. Coal Measures: Flint Ridge, Ohio.
- 1891. Macrodon obsoletus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 249. Lower Coal Measures: Des Moines, Iowa.
- 1894. Macrodon obsoletus. Keyes, Mo. Geol. Surv., vol. 5, p. 120, pl. 46, fig. 1. Upper Coal Measures: Kansas City, Missouri.
- 1897. Macrodon obsoletus. Smith, Proc. Am. Phil. Soc., vol. 35, p. 34.
  Upper Coal Measures: Sebastian County, Arkansas; Poteau Mountain, Indian Territory.

#### Macrodon ovatus Hall.

- \*1870. Macrodon ovatus. Hall, Prelim. Not. Lamell., 2, p. 15. Waverly S. S.: Granville and Newark. Ohio.
- 1885. Macrodon ovatus. Hall, Pal. N. Y., vol. 5, pt. 1, p. 351, pl. 51, fig. 8; pl. 93, fig. 16.

Waverly S. S.: Granville and Newark, Ohio.

#### Macrodon parvus White and Whitfield.

1862. Macrodon parvus. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 299.

Chemung Group: Burlington, Iowa.

#### Macrodon pettisensis Miller and Gurley.

1896. Macrodon pettisensis. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 10, pl. 2, figs. 17, 18. Chouteau L. S.: Near Sedalia, Missouri.

#### Macrodon reservatus Herrick.

- 1888. Macrodon reservatus. Herrick, Bull. Den. Univ., vol. 4, pl. 6, fig. 9. Waverly Group: Ohio.
- 1895. Macrodon reservatus. Herrick, Geol. Surv. Ohio, vol. 7, pl. 17, fig. 9. Kinderhook: Granville, Ohio.

## Macrodon sangamonensis Worthen.

1890. Macrodon sangamonensis. Worthen, Geol. Surv. Ill., vol. 8, p. 123, pl. 21, figs. 3, 3a.

Coal Measures: Roll's Ford, Sangamon County, Illinois.

1894. Macrodon sangamonensis? Keyes, Mo. Geol. Surv., vol. 5, p. 121, pl. 46, fig. 2.

Upper Coal Measures: Kansas City, Missouri.

#### Macrodon shubenacadiensis Hartt.

1865. Macrodon (f) Shubenacadiensis. Hartt, Dawson's Acad. Geol., p. 302, fig. 103. Carboniferous L. S.: Shubenacadie, Nova Scotia.

#### Macrodon striatocostatus Herrick.

1888. Macrodon striato-costatus. Herrick, Bull. Den. Univ., vol. 4, p. 37, pl. 6, fig. 7; pl. 11, fig. 27.

Waverly Group: Ashland County and Licking County, Ohio.

#### Macrodon tenuistriatus Meek and Worthen.

- 1866. Arca striata. Geinitz, Carb. und Dyas in Nebr., p. 20, tab. 1, fig. 32. (Not Mytilites striata Schlath. 1817.)
  Nebraska City, Nebraska.
- \*1866. Macrodon tenuistriata. Meek and Worthen, Proc. Chicago Acad. Sci., vol. 1, p. 17.

  Upper Coal Measures: Springfield, Illinois.
- 1872. Macrodon tenwistriata. Meek, U. S. Geol. Surv. Nebr., p. 207, pl. 10, figs. 20a, b.

Upper Coal Measures: Nebraska City, Nebraska; Springfield, Illinois; Iowa.

Lower Coal Measures: Illinois.

1873. Macrodos tenuistriatus. Meek aud Worthen, Geol. Surv. Ill., vol. 5, p. 576, pl. 26, fig. 4.

Upper Coal Measures: Springfield, Illinois.

- 1887. Macrodon tenuistriata. Herrick, Bull. Den. Univ., vol. 2, p. 31. Coal Measures: Flint Ridge, Ohio.
- 1888. Macrodon (allied to) tennistriata. Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 15.

Waverly Group: Cuyahoga Falls, Ohio.

- 1894. Macrodon tenuistriatus. Keyes, Mo. Geol. Surv., vol. 5, p. 120. Upper Coal Measures: Kansas City, Missouri.
- 1897. Macrodon tenuistriatus. Smith, Proc. Am. Phil. Soc., vol. 35, p. 34.
  Upper Coal Measures: Potesu Mountain, Indian Territory.

## Macrodon triangularis. See Schizodus triangularis Herrick.

#### Macrodon truncatus Walcott.

1884. \*Macrodon truncatus. Walcott, Pal. Eureka Dist., p. 243, pl. 8, fig. 2. Lower Carboniferous: Eureka District, Nevada.

#### Macrodon (species undetermined).

- 1868. Macrodon. Dawson, Acad. Geol., p. 303. Carboniferous L. S.: Nova Scotia.
- 1888. Macrodon sp. Herrick, Bull. Den. Univ., vol. 4, p. 38, pl. 11, fig. 28. Waverly Group: Portsmouth, Ohio.
- 1895. Macrodon sp. Herrick, Geol. Surv. Ohio., vol. 7, pl. 17, fig. 7. Cuyahoga Shale: Moot's Run, Licking County, Ohio.
- 1895. Macrodon sp. Herrick, Geol. Surv. Ohio, vol. 7, pl. 22, fig. 26. Cuyahoga Shale: Ohio.
- 1897. Macrodon sp. Smith, Proc. Am. Phil. Soc., vol. 35, p. 34. Upper Coal Measures: Crawford County, Arkansas.

## MARTESIA Leach, 1824.

#### Martesia roessleri Meek.

1871. Martesia? Rosseleri. Meek, Am. Jour. Conch., vol. 7, p. 9, pl. 1, fig. 4. Permian?: Fort Belknap, Texas.

#### MARTINIA McCoy, 1844.

#### Martinia contracta Meek and Worthen.

- 1861. Spirifera glabra var. contracta. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 143.
  - Chester L. S.: Pope County and Chester, Illinois.
- 1866. Spirifer glaber var. contractus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 298, pl. 23, figs. 5a, b.

Chester Group: Chester, Illinois; Pope County, Illinois.

## Mart\_n a contracta Meek and Worthen—Continued.

- 1874. Spirifer (Martinia) glaber var. contracta. White, Prelim. Rep. Inv. Foss., p. 20.
  - Carboniferous (Coal Measures): Camp Cottonwood, Lincoln County, Nevada.
- 1877. Spirifor (Martinia) glabor var. contracta. White, U. S. Geog. Surv W. 100 Merid., vol. 4, p. 136, pl. 10, figs. 2a-c.
  - Carboniferous: Camp Cottonwood, Lincoln County, Nevada.
- 1888. Spirifer glaber. Herrick, Bull. Den. Univ., vol. 4, pl. 11, fig. 15. Chester L. S.: Ohio.
- 1891. Spirifer (Martinia) contractus. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 583, pl. 13, figs. 17-19.
  Maxville L. S.: Ohio.
- 1894. Spirifera contracta. Keyes, Mo. Geol. Surv., vol. 5, p. 83. Kaskaskia L. S.: Chester, Illinois.
- 1895. Spirifera (Martinia) contracta. Whitfield, Geol. Surv. Ohio, vol. 7, p. 471, pl. 9, figs. 17-19.

  Maxville L. S.: Ohio.

# Martinia glabra Martin.

- 1863. Spirifera glabra. Davidson, Quart. Jour. Geol. Soc. Lond., vol. 19, p. 170, pl. 9, figs. 9, 10.
  - Lower Carboniferous L. S.: East River of Pictou, Mabon, Cape Breton, Windsor, Merigomish, etc., Nova Scotia.
- 1868. Spirifera glabra. Dawson, Acad. Geol., p. 291, fig. 89.
  - Carboniferous L. S.: East River of Pictou, Mabon, Cape Breton, Windsor, Brookfield, Merigomish, etc., Nova Scotia.

# Martinia planoconvexa. See Ambocœlia planoconvexa.

Martinia umbonata. See Ambocœlia umbonata.

## MAZONIA Meek and Worthen, 1868.

## Mazonia woodiana Meek and Worthen.

1868. Mazonia Woodiana. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 563, figs. a-d.

Coal Measures: Mazon Creek, Grundy County, Illinois.

## MEDLICOTTIA Waagen, 1880.

#### Medlicottia copei White.

- 1889. Medlicottia copei. White, Am. Nat., vol. 23, p. 117, pl. 1, ffgs. 1, 3. Permian: Baylor County, Texas.
- 1891. Medicottia copes. White, Bull. U. S. Geol. Surv., No. 77, p. 21, pl. 1, figs. 1, 3. Permian: Military Crossing of the Big Wichita, Baylor County, Texas, and San Angelo, Tom Green County, Texas.

## MEEKELLA White and St. John, 1868.

# Meekella occidentalis Newberry.

- 1861. Streptorhynchus occidentalis. Newberry, Ives' Colo. Expl. Exped., p. 126, pl. 1, figs. 5, 5a.
  - Upper Carboniferous (Cherty L. S.): Canyon of the Cascade River.
- 1892. Meekella occidentalis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 11B, figs. 18, 19.
  - Upper Carboniferous L. S.: Canyon of Diamond River.

## Meekella pyramidalis Newberry.

1861. Streptorhynchus pyramidale. Newberry, Ives' Colo. Expl. Exped., p. 126, pl. 2, figs. 11-13.

Carboniferous L. S.: On high mesa west of Little Colorado River.

#### Meekella striatocostata Cox.

- 1857. Meskella striato-costata. Cox, Geol. Surv. Ky., vol. 3, p. 568, pl. 8, fig. 7.
  Coal Measures: Providence, Hopkins County, Kentucky.
- 1858. Orthisina Shumardiana. Swallow, Trans. St. Louis. Acad. Sci., vol. 1, p. 183. Lower Permian: Valley of Cottonwood, Kansas.
- 1858. Orthisina Missouriensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 219. Upper Coal Measures: Dallas, Missouri; Kansas.
- 1859. Orthisina Shumardiana. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 26. Upper Coal Measures: Fort Riley, Kansas.
- 1859. Orthisina Missouriensis. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 26.
  - Upper Coal Measures: Leavenworth, Kansas.
- 1859. Streptorhynohus (Orthieina) Shumardianus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 395.
  - Permian S. S.: Guadalupe Mountains.
- 1863. Orthisina occidentalis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 82. Upper Coal Measures: Caldwell County, Missouri.
- 1866. Orthis striato-costata. Geinitz, Carb. und Dyas in Nebr., p. 48, tab. 3, figs. 22-24.

  Crescent City, Iowa.
- 1868. Meekella striato costata. White and St. John, Trans. Chicago Acad. Sci., vol. 1, p. 120, figs. 4-6.
  Coal Measures: Iowa.
- 1872. Meekella striato-costata. Meek, U. S. Geol. Surv. Nebr., p. 175, pl. 5, figs. 12a-c.
  - Upper Coal Measures: Nebraska City, Bellevue, Plattsmouth, Otoe City, and Aspinwall, Nebraska; Kentucky; Iowa; Missouri; Illinois.
- 1873. Meekella striato-costata. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 571, pl. 26, fig. 21.
  - Upper and Lower Coal Measures: Caseyville and various localities in Illinois.
- 1876. Meekella striatocostata. White, Powell's Rep. Geol. Uinta Mts., p. 90. Lower Aubrey Group: Confluence of Grand and Green rivers, Utah.
- 1877. Meekella striatocostata. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 126, pl. 9, figs. 4a-e.
  - Carboniferous: Camp Cottonwood, Lincoln County, Nevada; Tenney's Ranch, Kaibab Plateau, Arizona; Kanab Canyon; Meadow Creek, south of Fillmore; Le Verkin's Creek, and at a cliff east of Belleview, Utah.
- 1883. Streptorhynchus (Meekella) striatooostata. Hall, Rep. N. Y. State Geol. for 1882, pl. (10) 40, figs. 18-23.
- 1884. Meekella striatocostata. White, 13th Rep. Geol. Surv. Ind., p. 130, pl. 26, figs. 12-14.
  Coal Measures: Western part of Vigo County, Indiana.
- 1892. Meekella striatocostata. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 17, figs. 10-13.
- Upper Coal Measures: Winterset, Iowa; Lawrence County, Kansas. 1892. Meekella striatocostata. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 10,

figs. 18-23; pl. 11B, figs. 20-22.

- Upper Coal Measures: Winterset, Iowa; Lawrence County, Kansas.
- 1894. Meckella striatocostata. Keyes, Mo. Geol. Surv., vol. 5, p. 68, pl. 39, figs. 1a-c. Upper Coal Measures: Kansas City, Missouri.

## MEEKOPORA Ulrich, 1890.

## Meekopora ? aperta Ulrich.

1890. Meekopora † aperta. Ulrich, Geol. Surv. Ill., vol. 8, p. 485, pl. 76, figs. 1, 1a. Keokuk Group: King's Mountain, Kentucky.

## Meekopora approximata Ulrich.

1890. Meskopora approximata. Ulrich, Geol. Surv. Ill., vol. 8, p. 484, pl. 77, fig. 5. Chester Group: Chester, Ill.; Sloan's Valley, Kentucky.

1894. Meekopora approximata. Keyes, Mo. Geol. Surv., vol. 5, p. 16. Kaskaskia L. S.: Chester, Illinois.

### Meekopora clausa Ulrich.

1884. Fistulipora (f) clausa. Ulrich, Jour. Cin. Soc. Nat. Hist., vol. 7, p. 47, pl. 3, figs. 4-4b.

Kaskaskia Group: Tateville, Kentucky.

1890. Meskopora clausa. Ulrich, Geol. Surv. Ill., vol. 8, p. 485, pl. 76, fig. 6; pl. 77, figs. 7-7b.

Chester Group: Grayson County and Sloan's Valley, Kentucky; Chester, Illinois.

1894. Meekopora clausa. Keyes, Mo. Geol. Surv., vol. 5, p. 17. Kaskaskia L. S.: Chester, Illinois.

### Meekopora exima Ulrich.

1890. Meskopora exima. Ulrich, Geol. Surv. Ill., vol. 8, p. 483, pl. 77, figs. 6-6d. St. Louis or Chester Group: Monroe County, Illinois.

### (MEGAMBONIA Hall, 1859.)

Megambonia lyoni. See Cardiopsis radiata.

# MEGASTROMA Dawson, 1883.

## Megastroma laminosum Dawson.

1883. Megastroma laminosum. Dawson, Rep. Peter Redpath Mus., No. 2, p. 12.
Lower Carboniferous L. S.: Brookfield, Nova Scotia.

#### MEGATHENTOMUM Scudder, 1868.

#### Megathentomum pustulatum Scudder.

1868. Megathentomum pustulatum. Scudder, Proc. Bost. Soc. Nat. Hist., vol. 11, p. 401.

Coal Measures: Morris, Illinois.

1868. Megathentomum pustulatum. Scudder, Geol. Surv. Ill., vol. 3, p. 570, fig. 7. Carboniferous: Mazon Creek, Grundy County, Illinois.

1885. Megathentomum pustulatum. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 346, pl. 32, figs. 1, 9, 10.

Carboniferous: Morris, Illinois.

1890. Megathentomum pustulatum. Scudder, Foss. Insc. N. A., vol. 1, p. 310, pl. 18, figs. 1, 9, 10.

Carboniferous: Morris, Illinois.

## MEGISTOCRINUS Owen and Shumard, 1852.

Megistocrinus brevicornis. See Megistocrinus evansii.

Megistocrinus crassus. See Megistocrinus evensii var. crassus.

## Megistocrinus evansii Owen and Shumard.

- 1850. Actinocrinus Evansii. Owen and Shumard, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 68, pl. 7, fig. 3.
  - Subcarboniferous L.S.: Burlington, Iowa.
- 852. Megisteorinus evansii. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 594, tab. 5A, figs. 3a, b.

Lower Carboniferous L.S.: Burlington, Iowa.

2868. Actinocrinus brevicornis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 571, pl. 10, figs. 4a, b.

Burlington L. S.: Burlington, Iowa.

- 1858. Actinocrimus superlatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 572. Burlington L. S.: Burlington, Iowa.
- 1858. Actinocrinus minor. Hall, Geol. Iowa, vol. 1, pt. 2, p. 573. Burlington L. S.: Burlington, Iowa.
- 1862. Megistocrinus plenus. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 16.
  Upper Burlington L. S.: Burlington, Iowa.
- 1869. Megistocrinus parvirostris. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 165.
- Upper Burlington L. S.: Burlington, Iowa.

  1873. Megistocrinus parvirostris. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 388, pl. 6, fig. 7.

Burlington L. S.: Burlington, Iowa.

- 1894. Megistorinus cransi. Keyes, Mo. Geol. Surv., vol. 4, p. 164, pl. 22, fig. 6. Burlington L. S.: Springfield, Missouri.
- 1894. Megistocrinus brevicornis. Keyes, Mo. Geol. Surv., vol. 4, p. 165, pl. 22, figs. 5a, b.

Lower Burlington L. S.: Louisiana, Missouri.

1897. Megistocrinus Evansi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 533, pl. 47, figs. 1a, b, 2a, b, 3, 4a, b, 5a-c.
Upper and Lower Burlington L. S.: Burlington, Iowa; Henderson County, Illinois.

#### Megistocrinus evansi var. crassus White.

- 1862. Megistoorinus orassus. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 17. Lower Burlington L. S.: Burlington, Iowa.
- 1897. Megistocrinus Evanei var. orassus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 536.

Lower Burlington L. S.: Burlington, Iowa.

## Megistocrinus nobilis Wachsmuth and Springer.

1890. Megistocrinus nobilis. Wachsmuth and Springer, Geol. Surv. Ill., vol. 8, p. 169, pl. 16, figs. 6, 7.

Kinderhook Group: Le Grand, Iowa.

1890. Megistoorinus parvus. Wachsmuth and Springer, Geol. Surv. Ill., vol. 8, p. 171, pl. 15, fig. 7.

Kinderhook Group: Le Grand, Iowa.

1897. Megistocrinus nobilis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 537, pl. 47, figs. 6, 7, 8a, b; pl. 51, fig. 8.

Kinderhook Group: Le Grand, Marshall County, Iowa.

Megistocrinus parvirostris. See Megistocrinus evensii.

Megistocrinus parvus. See Megistocrinus nobilis.

Megistocrinus plenus. See Megistocrinus evensii.

Megistocrinus whitei. See Periechocrinus whitei.

## MELOCRINUS Goldfuss, 1826.

## Melocrinus pratteni McChesney.

1860. Forbesicorinus pratteni. McChesney, Desc. New Pal. Foss., p. 29. Carboniferons L. S.: Alabama.

1865. Forbesiocrinus pratteni. McChesney, Ill. New Spec. Foss., pl. 5, fig. 4.

1868. Melocrinus Pratteni. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 22, pl. 5, fig. 4.

Carboniferous L.S.: Alabama.

# Melocrinus sampsoni Miller and Gurley.

1895. Meloorinus sampsoni. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 55, pl. 2, figs. 27-29.

Chouteau L. S.: Sedalia, Missouri.

## MELONITES Owen and Norwood, 1846.

#### Melonites crassus Hambach.

1884. Melonites crassus. Hambach, Trans. St. Louis Acad. Sci., vol. 4, p. 548, pl. C, fig. 1.

St. Louis L. S.: St. Louis, Missouri.

1895. Melonites crassus. Keyes, Mo. Geol. Surv., vol. 4, p. 126.

St. Louis L. S.: St. Louis, Missouri.

1895. Melonites crassus. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 182. St. Louis L. S.: St. Louis, Missouri.

## Melonites danæ. See Oligoporus danæ.

## Melonites giganteus Jackson.

1896. Melonites gigantous. Jackson, Bull. Geol. Soc. Am., vol. 7, p. 172, pl. 4, fig. 19; pl. 5, figs. 21-24.

Lower Subcarboniferous: Bowling Green, Kentucky.

# Melonites indianensis Miller and Gurley.

1894. Melonites indianensis. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 5, pl. 1, fig. 1.

St. Louis Group: Greenville, Harrison County, Indiana.

## Melonites irregularis Hambach.

1884. Melonites irregularis. Hambach, Trans. St. Louis Acad. Sci., vol. 4, p. 549, pl. C, fig. 2.

St. Louis, L. S.: St. Louis, Missouri.

#### Melonites multiporus Norwood and Owen.

1846. Melonites multipora. Norwood and Owen, Am. Jour. Sci. (2), vol. 2, p. 225, figs. 1-3.

St. Louis L. S.: St. Louis, Missouri.

1861. Melonites multipora. Roemer, Archiv. für. Natürgesch. Jahrg. 21, Bd. 1, pp. 312-330, pl. 12.
Kohlenkalk: St. Louis and Indiana.

1866. Melonites multipora. Meek and Worthen, Geol. Surv. Ill., vol. 2, pp. 227, 228, figs. 21, 22.

1894. Melonites multipora. Keyes, Mo. Geol. Surv., vol. 4, p. 125, pl. 16, figs. 1a, b;
 pl. 17, figs. 1a-c.
 St. Louis L. S.: St. Louis, Missouri.

1895. Melonites multipora. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 181, pl. 19, figs. 1a, b; pl. 20, figs. 1a-c.

St. Louis L. S.: St. Louis, Missouri; Clarkesville, and Charlotte, Tennessee.

1896. Melonites multiporus. Jackson and Jaggar, Bull. Geol. Soc. Am., vol. 7,

pp. 135-170, pl. 2, figs. 1-7; pl. 3, figs. 10-17; pl. 4, fig. 18; pl. 5, fig. 20.

Subcarboniferous: Missouri, etc.

## Melonites septenarius Jackson.

1896. Melonites esptenarius. Jackson, Bull. Geol. Soc. Am., vol. 7, p. 182, pl. 9, fig. 49.

Warsaw Group: Buzzard's Roost, Franklin County, Alabama.

#### Melonites stewarti Safford.

1869. Melonites Stewartti. Safford, Geol. of Tenn., p. 346, pl. 6, figs. 1a-d. St. Louis L. S.: Middle Tennessee.

MESOBLASTUS Etheridge and Carpenter, 1886.

## Mesoblastus glaber Meek and Worthen.

1869. Granatocrinus glaber. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 91.

St. Louis L. S.: Hardin County, Illinois.

1873. Granatocrinus glaber. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 537, pl. 20, fig. 11.

St. Louis Group: Hardin County, Illinois.

### MESOTHYRA Hall, 1888.

## Mesothyra gurleyi Miller.

1892. Mesothyra gurleyi. Miller, Adv. Sheets, 18th Rep. Geol Surv. Ind., p. 77, pl. 9, fig. 37.

Kinderhook Group: Legrand, Iowa.

1894. Mesothyra gurleyi. Miller, 18th Rep. Geol. Surv. Ind., p. 331, pl. 9, fig. 37. Kinderhook Group: Legrand, Iowa.

### MESPILOCRINUS De Koninck and Lehon, 1854.

### Mespilocrinus konincki Hall.

1860. Mespilocrinus konincki. Hall, Supp. vol.1, pt. 2, Geol. Rep. Iowa, p. 69. Burlington L. S.: Burlington, Iowa.

1872. Mespilocrinus Konincki. Hall, Photo. Plates of Crinoids, pl. 6, fig. 9.

#### Mespilocrinus scitulus Hall.

1861. Mespiloorinus scitulus. Hall, Desc. New Spec. Crin., p. 9. Burlington L. S.

1861. Mespilocrinus scitulus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 321. Burlington L. S.: Burlington, Iowa.

1872. Mespilocrinus scitulus. Hall, Photo. Plates of Crinoids, pl. 6, figs. 7, 8.

## METABLASTUS Etheridge and Carpenter, 1886.

#### Metablastus bypyramidalis Hall.

1858. Pentremites bipyramidalis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 607, pl. 15, fig. 2.

Keokuk L. S.: Missouri.

1894. Metablastus bipyramidalis. Keyes, Mo. Geol. Surv., vol. 4, p. 137, pl. 18, fig. 13.

Keokuk L. S.: Boonville, Missouri.

#### Metablastus lineatus Shumard.

1858. Pentremites lineatus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 241, pl. 9, figs. 3a-d.

Encrinital L. S.: Near Monmouth, Illinois

1886. Metablastus lineatus. Etheridge and Carpenter, Cat. Blast., p. 199, pl. 3, figs. 14, 15; pl. 17, fig. 18.
Upper Burlington L. S.: Burlington, Iowa.

1894. Metablastus lineatus. Keyes, Mo. Geol. Surv., vol. 4, p. 136, pl. 18, fig. 11.
Upper Burlington L. S.: Hannibal, Missouri.

### Metablastus nitidulus Miller and Gurley.

1890. Troostocrinus mitidulus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 373, pl. 9, figs.14, 15; pl. 10, fig. 14.

St. Louis Group: Lanesville, Indiana.

# Metablastus varsouviensis Worthen.

1875. Pentremites (Tricalocrinus) Varsouviensis. Worthen, Geol. Surv. III., vol. 6, p. 521, pl. 21, figs. 8, 9.
Warsaw Beds: Warsaw and near Columbus, Illinois.

Totable star much smooth; Omales

## Metablastus wachsmuthi Gurley.

1884. Troostocrinus Wachsmathi. Gurley, New Carb. Foss., Bull. No. 2, p. 1.
Warsaw division of the St. Louis Group: Elletsville and Spergen Hill,
Indiana.

#### Metablastus wortheni Hall.

1858. Pentremites wortheni. Hall, Geol. Iowa, vol. 1, pt. 2, p. 606, pl. 15, fig. 1. Keokuk L. S.: Keokuk, Iowa; Nauvoo, Illinois.

1873. Pentremites Wortheni? Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 506, pl. 14, fig. 11.

Keokuk Group: Crawfordsville, Indiana.

1894. Metablastus wortheni. Keyes, Mo. Geol. Surv., vol. 4, p. 137, pl. 18, fig. 12. Keokuk L. S.: Boonville, Missouri; Warsaw, Illinois.

## METACOCERAS Hyatt, 1883.

## Metacoceras cavatiformis Hyatt.

1891. Metacoceras cavatiformis. Hyatt, 2d Ann. Rep. Geol. Surv. Tex., p. 334, figs. 30-33.

Carboniferous: Near Kansas City, Missouri.

1892. Metacoceras cavatiformis. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 72, .pl. 11, figs. 5, 7.
Upper Coal Measures: Kansas City, Missouri.

1893. Metacoceras cavatiformis. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 396. Carboniferous.

1894. Metacoceras cavatiformis. Miller, 18th Rep. Gool. Surv. Ind., p. 326, pl. 11, figs. 5, 7.

Upper Coal Measures: Kansas City, Missouri.

1894. Metacoceras cavatiforme. Keyes, Mo. Geol. Surv., vol. 5, p. 224. Upper Coal Measures: Kansas City, Missouri.

## Metacoceras dubium Hyatt.

1891. Metacoceras dubium. Hyatt, 2d Ann. Rep. Gool. Surv. Tex., p. 336, figs. 34, 35.
Carboniferous: Kansas.

1893. Metacoceras dubium. Hay, Trans. Kansas Acad. Sci., vol. 13, p. 39, figs. 6, 7. Carboniferous: Kansas.

# Metacoceras hayi Hyatt.

1891. Metacoceras Hayi. Hyatt, 2d Ann. Rep. Geol. Surv. Tex., p. 339, figs. 38, 39. Carboniferous: Kansas.

1893. Metacoceras Hayi. Hay, Trans. Kansas Acad. Sci., vol. 13, p. 40, figs. 8, 9. Carboniferous: Kansas.

## Metacoceras inconspicuum Hyatt.

1891. Metacoceras inconspicuum. Hyatt, 2d Ann. Rep. Geol. Surv. Tex., p. 340, figs. 40, 41.

Carboniferous: Kansas.

1893. Metacoceras inconspicuum. Hay, Trans. Kansas Acad. Sci., vol. 13, p. 41, figs. 10, 11.

Carboniferous: Kansas.

### Metacoceras sangamonensis Meek and Worthen.

1860. Nautilus (Discus) Sangamonensis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 470.

Coal Measures: Sangamon County, Illinois.

1866. Nautilus sangamonensis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 386, pl. 29, figs. 3-3b.
Upper Coal Measures: Sangamon County, Illinois.

1883. Metacoceras Sangamonense. Hyatt, Proc. Bost. Soc. Nat. Hist., vol. 22, p. 269.

1894. Metacoceras sangamonensis. Keyes, Mo. Geol. Surv., vol. 5, p. 225.
Upper Coal Measures: Kansas City, Missouri.

#### Metacoceras walcotti Hyatt.

1891. Metacoceras Walcotti. Hyatt, 2d Ann. Rep. Geol. Surv. Tex., p. 337, figs. 36, 37.

Carboniferous: San Saba County, Texas.

1893. Metacoceras walcotti. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 394, fig. 2. Carboniferous: Bend, San Saba County, Texas.

## METOPTOMA Phillips, 1836.

## Metoptoma umbella. See Igoceras capulus.

## Metoptoma undata Winchell.

1865. Metoptoma undata. Winchell, Proc. Acad. Nat. Sci. Phil., p. 131. Bed No. 5: Burlington, Iowa.

1889. Metoptoma? undata. Keyes, Proc. Acad. Nat. Sci. Phil., p. 298. Kinderhook Group: Burlington, Iowa.

#### Metoptoma peroccidens Walcott.

1884. Metoptoma peroccidene. Walcott, Pal. Eureka Dist., p. 260, pl. 18, fig. 16. Lower Carboniferous: Eureka District, Nevada.

## MIAMIA Dana, 1864.

#### Miamia bronsoni Dana.

1864. Miamia Bronsoni. Dana, Am. Jour. Sci. (2), vol. 37, p. 34, fig. 1. Coal Measures: Morris, Illinois.

1866. *Miamia bronsoni*. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 1, p. 190, pl. 6, figs. 2, 4.

Carboniferous: Morris, Illinois.

1868. Miamia Bronsoni. Scudder, Am. Nat., vol. 1, p. 630, pl. 16, fig. 1. Carboniferous: Morris, Illinois.

1885. Miamia Bronsoni. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 333. Carboniferous: Morris, Illinois.

1890. Miamia bronsoni. Scudder, Foss. Insc. N. A., vol. 1, pp. 18, 297, pl. [1], figs. 2, 4.

Carboniferous: Morris, Illinois.

Miamia danæ Scudder. See Gerarus danæ.

## MICHELINIA De Koninck, 1842.

#### Michelinia branneri Miller and Gurley.

1894. Michelinia branneri. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 68, pl. 7, figs. 12, 13. Coal Measures: Danville, Illinois.

## Michelinia eugeness White.

1884. Michelinia Eugenea. White, 13th Rep. Geol. Surv. Ind., p. 119, pl. 23, figs 14-16.

Coal Measures: Edwardsport, Knox County, and Eugene, Vermilion County, Indiana.

## Michelinia expansa White. See Leptopora typa.

Michelinia placenta White. See Leptopora typa.

## Michelinia (species undetermined).

1877. Michelinia —— sp. f Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 251, pl. 4, fig. 19.

Waverly Group: Dry Canyon, Oquirrh Mountains, Utah.

## MICROBLATTINA Scudder, 1895.

## Microblattina perdita Scudder.

1895. Microblattina perdita. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 57, pl. 3, fig. 5.

Lower (†) Coal Measures: East Providence, Rhode Island.

### MICROCYCLUS Meek and Worthen, 1868.

### Microcyclus blairi Miller.

1892. Microcyclus blairi. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 7, pl. 9, figs. 27, 28.

Chouteau L. S.: Sedalia, Missouri.

1894. Microcyclus blairi. Miller, 18th Rep. Geol. Surv. Ind., p. 261, pl. 9, figs. 27, 28.

Chouteau L. S.: Sedalia, Missouri.

1894. Microcyclus blairi. Keyes, Mo. Geol. Surv., vol. 4, p. 117. Chouteau L. S.: Sedalia, Missouri.

### MICRODOMA Meek and Worthen, 1866.

## Microdoma conica Meek and Worthen.

1866. Microdoma conica. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 269. Lower Coal Measures: Macoupin County, Illinois.

1873. Microdoma conica. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 598, pl. 28, fig. 2.

Lower Coal Measures: Macoupin County, Illinois.

### MICRODON Conrad, 1842.

## Microdon bellistriatus Conrad.

1885. Microdon (Cypricardella) bellistriatus. Hall, Pal. N. Y., vol. 5, pt. 1, p. 308, pl. 42, figs. 17-20; pl. 73, figs. 7-22; pl. 74, figs. 5-10. Hamilton Group: New York.

1888. Microdon bellistriatus. Herrick, Bull. Den. Univ., vol. 4, pl. 9, fig. 9. Bedford Shale: Central College, Ohio.

1889. Microdon bellistriatus. Herrick, Am. Geol., vol. 3, pl. 4, fig. 9. Bedford Shale: Ohio.

1895. Microdon bellistriatus. Herrick, Geol. Surv. Ohio, vol. 7, pl. 20, fig. 9. Shale above Berea Grit: Ohio.

#### Microdon connatus Walcott.

1884. Microdon (Cypricardella) connatus. Walcott, Pal. Eureka Dist., p. 250, pl. 24, figs 5, 5a.

Lower Carboniferous: Eureka District. Nevada.

### Microdon ellipticus Whitfield.

1882. Microdon (Cypricardella) ellipticus. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 65, pl. 7, fig. 37.

St. Louis Group: Spergen Hill, Indiana.

## Microdon ? eximia Miller and Gurley.

1896. Cypricardella eximia. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 15, pl. 2, fig. 25.

Chouteau L. S.: Sedalia, Missouri.

## Microdon ? gorbyi Miller.

1891. Cypricardella gorbyi. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 92, pl. 20, figs. 6, 7.

Keokuk Group: Boonville, Missouri.

1892. Cypricardella gorbyi. Miller, 17th Rep. Geol. Surv. Ind., p. 702, pl. 20, figs. 6, 7.
Keokuk Group: Boolette Missouri.

#### Microdon nucleata Hall.

1856. Cypricardella nucleata. Hall, Trans. Albany Inst., vol. 4, p. 17. St. Louis L. S.: Spergen Hill, Indiana.

1858. Cyprioardella nucleata. Hall, Geol. Ia., vol. 1, pt. 2, p. 663, pl. 23, figs. 10a-d.

Warsaw L. S.: Spergen Hill, Indiana.

1882. Microdon (Cypricardella) nucleata. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 64, pl. 7, figs. 35, 36.

St. Louis Group: Spergen Hill and Bloomington, Indiana.

1883. Cypricardella nucleata. Hall, 12th Rep. Geol. Surv. Ind., p. 339, pl. 30, figs. 35, 36.

St. Louis Group: Spergen Hill and Lanesville, Indiana.

#### Microdon oblonga Hall.

1856. Cypricardella oblonga. Hall, Trans. Albany Inst., vol. 4, p. 18. St. Louis L. S.: Spergen Hill and Bloomington, Indiana.

1882. Microdon (Cypricardella) oblongs. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 65, pl. 7, figs. 30-34.

St. Louis Group: Spergen Hill and Bloomington, Indiana.

1883. Cypricardella oblonga. Hall, 12th Rep. Geol. Surv. Ind., p. 340, pl. 30, figs. 30-34.

St. Louis Group: Spergen Hill, Lanesville, and Bloomington, Indiana.

# Microdon quadratus White and Whitfield.

1862. Cypricardella quadrata. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 300.

Chemung Group: Burlington, Iowa.

## Microdon reservatus Hall.

\*1870. Microdon reservatus. Hall, Prelim. Not. Lam. Shells, 2, p. 33. Waverly S. S.: Licking County, Ohio.

1885. Microdon reservatus. Hall, Pal. N. Y., vol. 5, pt. 1, p. 312; pl. 74, figs. 11-13. Waverly S. S.: Licking County, Ohio.

1888. Microdon reservatus. Herrick, Bull. Den. Univ., vol. 3, p. 75, pl. 4, fig. 14. Waverly Group: Licking County, Ohio.

#### Microdon subellipticus Hall.

1856. Cypricardella subelliptica. Hall, Trans. Albany Inst., vol. 4, p. 17. St. Louis L. S.: Spergen Hill, Indiana.

1858. Cypricardella subelliptica. Hall, Geol. Ia., vol. 1, pt. 2, p. 664, pl. 23, figs. 11, 12. Warsaw L. S.: Spergen Hill, Indiana.

Bull. 153----23

### Microdon subellipticus Hall—Continued.

- 1882. Microdon (Cypricardella) subelliptics. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 64, pl. 7, figs. 27-29.
  - St. Louis Group: Spergen Hill and Bloomington, Indiana.
- 1883. Cyprioardella subelliptica. Hall, 12th Rep. Geol. Surv. Ind., p. 339, pl. 30, figs. 27-29.
  - St. Louis Group: Spergen Hill, Indiana.
- 1886. Cypricardella subelliptica (†). Claypole, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 250.
  - Lower Coal Measures: Wilkesbarre, Pennsylvania.
- 1887. Microdon (cf. subelliptica). Herrick, Bull. Den. Univ., vol. 2, p. 40, pl. 4, fig. 32.
  - Coal Measures: Flint Ridge, Ohio.

## MILIOLITES Lamark.

## Miliolites centralis Say.

1823. Miliolites centralis. Say, Long's Exped. to Rocky Mts., vol. 1, p. 152 (footnote).

Missouri River, near the Platte.

1897. Miliolitis centralis. Harris, Bull. Am. Pal., vol. 1, p. 385 (115).

### Miliolites secalicus Say.

1823. Miliolites secalicus. Say, Long's Exped. to Rocky Mts., vol. 1, p. 151 (footnote).

Missouri River, near the Platte.

1897. Miliolites secalicus. Harris, Bull. Am. Pal., vol. 1, p. 385 (115).

## MILLEPORA Linneus, 1758.

## Millepora cylindrica Say.

1823. Millepora cylindrica. Say, Long's Exped. to Rocky Mts., vol. 1, p. 47 (footnote).

Missouri River, 5 miles below Council Bluff.

1897. Millepora cylindrica. Harris, Bull. Am. Pal., vol. 1, p. 381 (111).

## MISSOURICRINUS Miller, 1891.

#### Missourierinus admonitus Miller.

1891. Missouricrinus admonitus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 31, pl. 4, figs. 11, 12.

Burlington Group: Sedalia, Missouri.

## MODIOLA Lamark, 1801.

#### Modiola avonia Dawson.

1868. Modiola avonia. Dawson, Acad. Geol., p. 301. Carboniferous L. S.: Windsor, Nova Scotia.

## Modiola illinoisensis Worthen.

- 1884. Modiola illinoiensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 16. St. Louis L. S. (colite beds): Monroe County, Illinois.
- 1890. Modiola illinoiensis. Worthen, Geol. Surv. Ill., vol. 8, p. 125, pl. 20, figs. 2, 2a. St. Louis L. S. (oolite): Monroe County, Illinois.

#### Modiola minor Lea.

1853. Modiola minor. Lea, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 205, pl. 20, fig. 2. Coal Formation: Wilkesbarre, Pennsylvania.

#### Modiola nevadensis Walcott.

1884. Modiola? Nevadensis. Walcott, Pal. Eureka Dist., p. 239, pl. 19, fig. 8.
Lower Carboniferous: Eureka District, Nevada.

### Modiola pooli Dawson.

1868. Modiol. Pooli. Dawson, Acad. Geol., p. 301, fig. 100.
Carboniferous L. S.: Shubenacadie, Windsor, and Irish Cove, Nova Scotia.

## Modiola subelliptica Meek.

1866. Clidophorus (an Pleurophorus) occidentalis. Geinitz, Carb. und Dyas in Nebr., p. 23, tab. 2, fig. 6. (Not Pleurophorus occidentalis M. and H., 1858.) Nebraska City, Nebraska.

1872. Modiola? subelliptica. Meek, U. S. Geol. Surv. Nebr., p. 211, pl. 10, fig. 5.
Upper Coal Measures: Nebraska City, Nebraska; Riverside, 3 miles below Atchison, Kansas.

#### Modiola waverliensis Herrick.

1888. Modiola waverliensis. Herrick, Bull. Den. Univ., voz. 3, p. 63, pl. 1, fig. 9; pl. 4, fig. 10; pl. 7, fig. 29.

Waverly Group: Licking County, Ohio.

1895. Modiola waverliensis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 24, fig. 21. Kinderhook: Ohio.

# Modiola wyomingensis. See Myalina wyomingensis.

# MODIOMORPHA Hall, 1870.

## Modiomorpha ambigua Walcott.

1884. Modiomorpha ambigua. Walcott, Pal. Eureka Dist., p. 239, pl. 20, fig. 1. Lower Carboniferous: Eureka District, Nevada.

## Modiomorpha desiderata Walcott.

1884. Modiomorpha † desiderata. Walcott, Pal. Eureka Dist., p. 240, pl. 20, fig. 3. Lower Carboniferous: Eureka District, Nevada.

## Modiomorpha hyalea Hall.

\*1870. Modiomorpha hyalea. Hall, Prelim. Not. Lamell. Shells, 2, p. 79. Waverly S. S.: Granville, Licking County, Ohio.

1885. Modiomorpha hyalea. Hall, Pal. N. Y., vol. 5, pt. 1, p. 292, pl. 41, figs. 28-30. Waverly S. S.: Granville, Licking County, Ohio.

1888. Modiomorpha hyalea † Herrick, Bull. Den. Univ., vol. 3, p. 76, pl. 10, fig. 4. Waverly Group: Licking County, Ohio.

## Modiomorpha parvula Claypole.

1886. Modiomorpha (f) parvula. Claypole, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 248.

Lower Coal Measures: Wilkesbarre, Pennsylvania.

## Modiomorpha pintoensis Walcott.

1884. Modiomorpha? Pintöeneis. Walcott, Pal. Eureka Dist., p. 240, pl. 20, fig. 2. Lower Carboniferous: Eureka District, Nevada.

## MONOPTERIA Meek and Worthen, 1866.

## Monopteria auricula Stevens.

1858. Gervilla Auricula. Stevens, Am. Jour. Sci. (2), vol. 25, p. 265.
Coal Measures: Danville, Illinois.

## Monopteria gibbosa Meek and Worthen.

1866. Pterinea (Monopteria) gibbosa. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 340, pl. 27, figs. 11-11b.

Coal Measures: Saline Creek, Gallatin County, Illinois.

## Monopteria gibbosa Meek and Worthen-Continued.

- 1884. Monopteria gibbosa. White, 13th Rep. Geol. Surv. Ind., p. 139, pl. 30, figs. 11, 12.
  - Coal Measures: Vermilion, Sullivan, and Posey counties, Indiana.
- 1886. Monopteria (Pterinea) gibbosa. Heilprin, 2d Geol. Surv. Penn., Ann. Rep. 1885, p. 455, fig. 11a; p. 444, fig. 11.
  - Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.
- 1886. Monopteria (Pterinea) gibbosa. Heilprin, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 271, fig. 11a; p. 272, fig. 11.
  - Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.
- 1894. Monopteria gibbosa. Keyes, Mo. Geol. Surv., vol. 5, p. 114, pl. 43, figs. 2a, b. Upper Coal Measures: Kansas City, Missouri.

#### Monopteria longispina Cox.

- 1857. Gervillia longispina. Cox, Geol. Rep. Ky., vol. 3, p. 568, pl. 8, fig. 6.
  Coal Measures: Providence, Hopkins County, Kentucky.
- 1894. Monoptera longispina. Keyes, Mo. Geol. Surv., vol. 5, p. 114, pl. 43, fig. 1. Upper Coal Measures: Kausas City, Missouri.

## Monopteria marian White.

- 1874. Monopteria Marian. White, Prelim. Rep. Inv. Foss., p. 22. Carboniferous (Coal Measures): Camp Apache, Arizona.
- 1877. Monopteria Marian. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 151, pl. 11, figs. 4a-c.

Carboniferous: Camp Apache, Maricopa County, Arizona.

### MONOTIS Bronn, 1824.

# Monotis gregaria Meek and Worthen.

- 1870. Monotis? gregaria. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 38. Coal Measures: Jacksonville, Illinois.
- 1873. Monotis? gregaria. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 573, pl. 26, fig. 5.

Coal Measures: Jacksonville, Illinois.

1894. Monotis? gregaria. Keyes, Mo. Geol. Surv., vol. 5, p. 114. Upper Coal Measures: Kansas City, Missouri.

#### Monotis halli Swallow.

1858. Monotis Halli. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 185. Permian: Valley of Cottonwood and near Council Grove, Kansas.

#### Monotis hawni. See Pseudomonotis hawni.

Monotis radialis. See Pseudomonotis radialis.

## Monotis speluncaria Schlotheim.

1859. Monotis speluncaria. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 396. Permian L. S.: Guadalupe Mountains.

#### Monotis speluncaria var. americana Swallow.

1858. Monotis speluncaria var. americana. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 186.

Upper Permian: Near Smoky Hill Fork and Council Grove, Kansas.

## Monotis variabilis Swallow.

1858. Monotis variabilis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 187. Lower Permian: Valley of Cottonwood, Kansas.

## Monotis (species undetermined).

1859. Monotis sp. (†) Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 397. White Permian L. S.: Guadalupe Mountains.

## MOOREA Jones and Kirkby, 1867.

### Moorea granosa Ulrich.

1891. Moorea granosa. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 206, pl. 12, figs. 9a, b.

Chester Group: Near Grayson Springs, Kentucky.

## MUNSTEROCERAS Hyatt, 1883.

#### Munsteroceras oweni Hall.

1860. Goniatites oweni. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 100, figs. 11, 12.

Goniatite L. S.: Rockford, Indiana.

1862. Goniatites Oweni. Winchell, Am. Jour. Sci. (2), vol. 33, p. 364.
Marshall S. S.: Pointe aux Barques, Michigan.

1879. Goniatites Oweni. Hall, Pal. N. Y., vol. 5, pt. 2, p. 470, pl. 73, figs. 3-8; pl. 74, fig. 9.

Goniatite L. S.: Rockford, Indiana.

1881. Goniatites oweni. White, 2d. Ann. Rep. Dept. Stat. and Geol. Ind., p. 514, pl. 7, figs. 3, 4.
Kinderhook Group: Rockford. Indians.

1886. Goniatites Oweni. Hall, 5th Ann. Rep. N. Y. State Geol., pl. (128) 13, figs. 4, 7. Goniatites L. S.: Rockford, Indiana.

1888. Goniatites Oweni. Beecher, Pal. N. Y., vol. 5, pt. 2, Supp. p. 40, pl. 128, figs. 4, 7.

Goniatite L. S.: Rockford, Indiana.

1897. Glyphioceras Oweni. Foord and Crick, Cat. Foss. Ceph., pt. 3, p. 188, fig. 89. Goniatite Limestone, Kinderhook Group: Indiana, U. S. A.

#### Munsteroceras parallum Hall.

1860. Goniatites oweni var. parallela. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 100, figs. 13, 14.
Goniatite L. S.: Rockford, Indiana.

1862. Goniatites Oweni var. parallela. Winchell, Am. Jour. Sci. (2), vol. 33, p. 364. Marshall S. S.: Pointe aux Barques, Michigan.

1879. Goniatites Oweni var. parallela. Hall, Pal. N. Y., vol. 5, pt. 2, p. 473, pl. 73, figs. 1, 2; pl. 74, fig. 10.
 Goniatite L. S.: Rockford, Indiana.

1883. Munsteroceras parallelum. Hyatt, Proc. Bost. Soc. Nat. Hist., vol. 22, p. 327.

1897. Glyphioceras parallelum. Foord and Crick, Cat. Foss. Ceph., pt. 3, p. 189, fig. 90.

Goniatite Limestone, Kinderhook Group: Indiana, U.S.A.

## MURCHISONIA D'Archiac and De Verneuil, 1841.

#### Murchisonia archimedia McChesney.

1861. Murchisonia archimedea. McChesney, Desc. New Spec. Pal. Foss., p. 89. Coal Measures: La Salle, Illinois.

1865. Murchisonia archimedea. McChesney, Ill. New Spec. Foss., pl. 2, figs. 16a-b.

1868. Murchisonia archimedea. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 48, pl. 2, figs. 16a, b.
Coal Measures; La Salle, Illinois.

## Murchisonia attenuata Hall.

1856. Murchisonia attenuata. Hall, Trans. Albany Inst., vol. 4, p. 27.
St. Louis L. S.: Spergen Hill, Indiana.

#### Murchisonia attenuata Hall—Continued.

1882. Murchisonia attenuata. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 88, pl. 9, figs 13.

St. Louis Group: Spergen Hill, Indiana.

1883. Murchisonia attenuata. Hall, 12th Rep. Geol. Surv. Ind., p. 360, pl. 32, fig. 13.

St. Louis Group: Spergen Hill, Indiana.

# Murchisonia copii White.

1881. Murchisonia copei. White, U. S. Geol. Surv. W. 100 Merid., vol. 3, Supp. Appendix, p. xxxi, pl. 3, figs. 10a, b.
Carboniferous: Near Taos. New Mexico.

Murchisonia elegantula. See Pleurotomaria elegantula.

## Murchisonia gypsea Dawson.

1868. Murchisonia gypsea. Dawson, Acad. Geol., p. 310, fig. 123. Carboniferous L. S.: Windsor, Nova Scotia.

## Murchisonia indianensis Miller and Gurley.

1896. Murchisonia indianensis. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 18, pl. 2, figs. 31, 32.
Knobstone Group: New Albany, Indiana.

# Murchisonia inornata Meek and Worthen.

1866. Murchisonia inornata. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 274.

Lower Coal Measures: Hodge's Creek, Macoupin County, Illinois.

1873. Murchisonia inornata. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 599, pl. 28, fig. 6.

Coal Measures: Hodge's Creek, Macoupin County, Illinois.

## Murchisonia insculpta Hall.

1856. Murchisonia insculpta. Hall, Trans. Albany Inst., vol. 4, p. 26.
St. Louis L. S.: Spergen Hill and Bloomington, Indiana.

1882. Murchisonia insculpta. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 85, pl. 9, fig. 18.

St. Louis Group: Spergen Hill and Bloomington, Indiana.

1883. Murchisonia insculpta. Hall, 12th Rep. Geol. Surv. Ind., p. 359, pl. 32, fig. 18.

St. Louis Group: Spergen Hill, Lanesville, and Bloomington, Indiana.

#### Murchisonia kansasensis Swallow.

1858. Murchisonia (?) Kansasensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 195.

Permian: Valley of Cottonwood, Kansas.

#### Murchisonia keokuk Worthen.

1890. Murchisonia keokuk. Worthen, Geol. Surv. Ill., vol. 8, p. 141, pl. 23, figs. 2, 2a. Keokuk, L. S.: Keokuk, Iowa.

## Murchisonia lasallensis Worthen.

1890. Murchisonia lasallensis. Worthen, Geol. Surv. Ill., vol. 8, p. 141, pl. 25, figs. 7, 7a.
Upper Coal Measures: La Salle, Illinois.

## Murchisonia limitaris Hall.

1860. Murchisonia (Pleurotomaria?) limitaris. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 108.

Goniatite L. S.: Rockford, Indiana.

Murchisonia minima. Lee Aclisina minuta.

#### Murchisonia nebrascensis Geinitz.

1866. Murchisonia Nebrasconsis. Geinitz, Carb. und Dyas in Nebr., p. 12. tab. 1, fig. 17.

Nebraska City, Nebraska.

1872. Murchisonia Nebrascensis. Meek, U. S. Geol. Surv. Nebr., p. 234, pl. 11, fig. 6. Upper Coal Measures: Nebraska City, Nebraska.

## Murchisonia neglecta Winchell.

1863. Murchisonia neglecta. Winchell, Proc. Acad. Nat. Sci. Phil., p. 20. Yellow S. S.: Burlington, Iowa.

# Murchisonia obsoleta Meek.

1871. Murchisonia obsoleta. Meek, Proc. Acad. Nat. Sci. Phil., p. 175.
Coal Measures: Danville, Illinois.

## Murchisonia perversa Swallow.

1858. Murchisonia (?) perversa. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 195.
Permian: Valley of Cottonwood, Kansas.

### Murchisonia prolixa White and Whitfield.

1862. Murchisonia ? proliza. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 303.

Chemung Group: Burlington, Iowa.

1870. Murchisonia proliza. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 257. Waverly Group: Sciotoville, Ohio.

1889. Murchisonia proliza. Keyes, Proc. Acad. Nat. Sci. Phil., p. 297. Kinderhook Group: Burlington, Iowa.

### Murchisonia pygmæa Rowley.

1895. Murchisonia (f) pygmaa. Rowley, Am. Geol., vol. 16, p. 222, fig. 20. Louisiana L. S.: Louisiana, Missouri.

# Murchisonia quadricarinata Worthen.

1884. Loxonema quadri-carinatus. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 7.

Coal Measures: Peoria County, Illinois.

1890. Loxonema quadri-carinatum. Worthen, Geol. Surv. Ill., vol. 8, p. 140, pl. 23, figs. 9, 9a.

Coal Measures: Peoria County, Illinois.

1891. Murchisonia quadricarinata. Keyes, Proc. Acad. Nat. Sci. Phil., p. 254. Lower Coal Measures: Des Moines, Iowa.

## Murchisonia quadricineta Winchell.

1863. Murchisonia quadrioineta. Winchell, Proc. Acad. Nat. Sci. Phil., p. 19. Yellow S. S.: Burlington, Iowa.

1870. Murchisonia quadricineta. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 257. Waverly Group: Sciotoville, Ohio.

1888. Murchisonia quadrioineta? Herrick, Bull. Den. Univ., vol. 3, p. 87, pl. 2, fig. 28.
Waverly Group: Licking County, Ohio.

## Murchisonia shumardana Winchell.

1863. Murchisonia Shumardiana. Winchell, Proc. Acad. Nat. Sci. Phil., p. 20. Yellow S. S.: Burlington, Iows.

## Murchisonis subtæniata. See Orthonema subtæniata.

# Murchisonia terebra White.

1879. Murchisonia terebra. White, Bull. U. S. G. and G. Surv. Terr., vol. 5, p. 219. Carboniferous: Wild Band Pockets, Northern Arizona, 15 miles south of Pipe Spring.

### Murchisonia terebra White—Continued.

- 1880. Murchisonia terebra. White, Cont. to Inv. Pal., No. 6, p. 139, pl. 34, fig. 4a.

  Upper Carboniferous: Wild Band Pockets, northern Arizona, 15 miles south of Pipe Spring.
- 1894. Murchisonia terebra. Keyes, Mo. Geol. Surv., vol. 5, p. 146, pl. 49, fig. 4. Upper Coal Measures: Kansas City, Missouri.

## Murchisonia terebriformis Hall.

- 1856. Murchisonia terebriformis. Hall, Trans. Albany Inst., vol. 4, p. 28. St. Louis, L. S.: Bloomington, Indiana.
- 1882. Murchisonia terebriformis. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 86, pl. 9, figs. 15, 16.
  - St. Louis Group: Bloomington, Indiana.
- 1883. Murchisonia terebriformis. Hall, 12th Rep. Geol. Surv. Ind., p. 362, pl. 32, figs, 15, 16.
  - St. Louis Group: Bloomington and Lanesville, Indiana.

## Murchisonia texana Shumard.

- 1860. Murchisonia Texana. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 626.
  Coal Measures: Young County, Texas, 9 miles east of Indian Reservation.
- Murchisonia tricingulata Dawson.
  - 1868. Murchisonia tricingulata. Dawson, Acad. Geol., p. 310. Carboniferous L. S.: Windsor and Pugwash, Nova Scotia.

#### Murchisonia turritella Hall.

- 1856. Murchisonia turritella. Hall, Trans. Albany Inst., vol. 4, p. 27. St. Louis L. S.: Spergen Hill, Indiana.
- 1882. Murchisonia turritella. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 88, pl. 9, fig. 12.
  - St. Louis Group: Spergen Hill, Indiana.
- 1883. Murchisonia turritella. Hall, 12th Rep. Geol. Surv. Ind., p. 361, pl. 32. fig. 12.
  - St. Louis Group: Spergen Hill and Lanesville, Indiana.

#### Murchisonia vermicula Hall.

- 1856. Murchisonia vermicula. Hall, Trans. Albany Inst., vol. 4, p. 27. St. Louis L. S.: Spergen Hill and Bloomington, Indiana.
- 1882. Murchisonia vermicula. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 87, pl. 9, fig. 11.
  - St. Louis Group: Spergen Hill and Bloomington, Indiana.
- 1883. Murchisonia vermicula. Hall, 12th Rep. Geol. Surv. Ind., p. 361, pl. 32, fig. 11.
  - St. Louis Group: Lanesville and Bloomington, Indiana.

#### Murchisonia vineta Hall.

- 1856. Loxonema vincta. Hall, Trans. Albany Inst., vol. 4, p. 28.
  St. Louis L. S.: Spergen Hill, Indiana.
- 1882. Murchisonia vinota. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 86, pl. 9, fig. 14.
  - St. Louis Group: Spergen Hill, Indiana.
- 1883. Murchisonia vincta. Hall, 12th Rep. Geol. Surv. Ind., p. 363, pl. 32, fig. 14. St. Louis Group: Spergen Hill, Indiana.

## Murchisonis (species undetermined).

- 1858. Murchisonia subangulata Verneuil (?), Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 196.
  - Upper Permian: Kansas.
- 1870. Murchisonia sp. f Winchell, Proc. Am. Phil. Soc., vol. 11, p. 260. Waverly Group: Near Shafer's, Pennsylvania.

## Murchisonis (species undetermined)—Continued.

1888. Murchisonia sp. Herrick, Bull. Den. Univ., vol. 4, pl. 7, fig. 6. Waverly Group: Moot's Run, Licking County, Ohio.

1891. Murchisonia —— ? White, Bull. U. S. Geol. Surv. No. 77, p. 25, pl. 3, figs. 12, 13.

Permian: Military Crossing, Baylor County, Texas.

1896. Murchisonia sp. Herrick, Geol. Surv. Ohio, vol. 7, pl. 18, fig. 6. Cuyahoga Shale: Moat's Run, Licking County, Ohio.

## MYALINA De Koninck, 1844.

## Myalina angulata Meek and Worthen.

1860. Myalina angulata. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 455. Chester L. S.: Chester, Illinois.

1866. Myalina angulata. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 300, pl. 23, figs. 7a, b.

Chester Group: Chester, Illinois.

1894. Myalina angulata. Keyes, Mo. Geol. Surv., vol. 5, p. 118. Kaskaskia L. S.: Ste. Mary, Missouri.

#### Myalina apachesi Marcou.

1858. Myalina apachesi. Marcou, Geol. N. A., p. 44, pl. 7, figs. 6, 6a. Mountain L. S.: Near Pecos Village, New Mexico.

## Myalina arkansana Weller.

1897. Myalina arkansana. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 262, pl. 19, figs. 16, 17.
Batesville S. S.: Batesville, Arkansas.

## Myalina aviculoides Meek and Hayden.

1860. Myalina aviculoides. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 184. Permian: Cotton wood Creek, Kansas.

1864. Myalina aviculoides. Meek and Hayden, Pal. Up. Mo., p. 51, pl. 2, figs. 8a-d. Permian: Cottonwood Creek, Kansas.

1877. Myalina aviculoides. Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 275, pl. 6, fig. 8.

Permo-Carboniferous L.S.: Foothills southeast of Salt Lake City, Wahsatch Range, Utah.

1891. Myalina aviculoides. White, Bull. U. S. Geol. Surv. No. 77, p. 28, pl. 2, fig. 12. Permian: Goodwin Creek, Baylor County, Texas.

## Myalina aviculoides. See Myalina rara.

## Myalina concava Swallow.

1858. Mytilus (Myalina?) concavus. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 188.
Permian(?): Valley of the Kansas, Kansas.

## Myalina concentrica Meek and Worthen.

1860. Myalina concentrica. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 456, Warsaw L. S.: Spergen Hill, Indiana.

1866. Myalina concentrica. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 281, pl. 9, figs. 3a-c.

St. Louis Group: Spergen Hill, Indiana.

## Myalina congeneris Walcott.

1884. Myalina congeneris. Walcott, Pal. Eureka Dist., p. 237, pl. 19, fig. 6; pl. 22, fig. 10.

Lower Carboniferous: Eureka District, Nevada.

## Myalina cuneiformis Gurley.

1883. Myalina cunciformis. Gurley, New Carb. Foss., Bull. No. 1, p. 4. Upper Carboniferous: Ouray, Colorado.

### Myalina deltoidea Gabb.

1859. Myálina deltoidea. Gabb, Proc. Acad. Nat. Sci. Phil., p. 297. Coal Measures: Fort Belknap, Texas.

1860. Myalina deltoidea. Gabb, Proc. Acad. Nat. Sci. Phil., p. 55, pl. 1, figs. 1a-c. ;
Carboniferous.

### Myalina imbricaria Winchell.

1862. Myalina imbricaria. Winehell, Proc. Acad. Nat. Sci. Phil., p. 412. Marshall S. S.: Moscow, Michigan.

#### Myalina kansasensis Shumard.

1858. Myalina Kansasensis. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 213.
Upper Coal Measures: Santa Fé road, south of Lecompton; 9 miles southwest of Council Grove; Sac and Fox Agency; headwaters of Osage River, and valley of Verdigris River, Kansas. Missouri River bluffs, below mouth of Platt River, Nebraska.

1894. Myalina kansasensis. Keyes, Mo. Geol. Surv., vol. 5, p. 117, pl. 43, fig. 5. Upper Coal Measures: Kansas City, Missouri.

## Myalina keokuk Worthen.

1875. Myalina Keokuk. Worthen, Geol. Surv. Ill., vol. 6, p. 524, pl. 30, fig. 5.
Keokuk L. S.: Keokuk, Iowa; Warsaw, Nauvoo, and Hamilton, Illinois.

1894. Myalina keokuk. Keyes, Mo. Geol. Surv., vol. 5, p. 117. Keokuk L. S.: Bonaparte, Iowa; St. Francisville, Missouri.

## Myalina lowensis Winchell.

1865. Myalina Lowensis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 127. Base of Burlington L. S.: Burlington, Iowa.

# Myalina meliniformis Meek and Worthen.

1866. Myalina meliniformic. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 343, pl. 27, fig. 3.

Coal Measures: Saline Creek, Gallatin County, Illinois ( ?).

## Myalina michiganensis Winchell.

1862. Myalina Michiganensis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 411. Marshall Group: Marshall and Moscow, Michigan.

1865. Myalina Michiganesis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 127.
Marshall Group: Napoleon Cut, Jackson County and German's Quarry,
Hillsdale County, Michigan.

1888. Myalina michiganensis? Herrick, Bull. Den. Univ., vol. 3, p. 63, pl. 4, fig. 6. Waverly Group: Licking County, Ohio.

1895. Myalina michiganensis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 24, fig. 22. Kinderhook: Ohio.

# Myalina monroensis Worthen.

1884. Myalina monroensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 15. Oolitic beds of St. Louis L. S.: Monroe County, Illinois.

1890. Myalina monroensis. Worthen Geol. Surv. Ill., vol. 8, p. 127, pl. 20, figs. 10, 10a.

St. Louis L. S. (oolite): Monroe County, Illinois.

#### Myalina nemesis Walcott.

1884. Myalina Nemesis. Walcott, Pal. Eureka Dist., p. 237, pl. 19, fig. 5, pl. 22, fig. 7.
 Lower Carboniferous: Eureka District, Nevada.

## Myalina nessus Walcott.

1884. Myalina Nessus. Walcott, Pal. Eureka Dist., p. 238, pl. 22, fig. 8, 8a. Lower Carboniferous: Eureka District, Nevada.

## Myalina perattenuata Meek and Hayden.

- 1858. Myalina (Mytelus) perattenuata. Meek and Hayden, Trans. Albany Inst., vol. 4, p. 77.
  - Permian: Smoky Hill Fork, Kansas and Missouri rivers.
- 1859. Myalina (Mytilus) perattenuata. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 28.

Upper Coal Measures: Smoky Hill River, Kansas.

- 1864. Myalina perattenuata. Meek and Hayden, Pal. Up. Mo., p. 32, pl. 1, figs. 12a, b.
  - Coal Measures: Opposite the northern boundary of Missouri on the Missouri River.
- 1873. Myalina perattenuata. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 582, pl. 26, fig. 11.
  - Coal Measures: Springfield, Illinois.
- 1891. Myalina perattenuata. White, Bull. U. S. Geol. Surv. No. 77, p. 28, pl. 4, figs. 13-15.

Permian: Goodwin Creek and Military Crossing, Baylor County, Texas; Camp Creek, Archer County, Texas.

1894. Myalina perattenuata. Keyes, Mo. Geol. Surv., vol. 5, p. 118. Upper Coal Measures: Kansas City, Missouri.

## Myalina permiana Swallow.

1858. Mytilus (Myalina) Permianus. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 187.

Permian (1): Kansas.

- 1864. Myalina permiana. Meek and Hayden, Pal. Up. Mo., p. 52, pl. 2, figs. 7a-c. Permian: Smoky Hill Fork of Kansas River, and Cottonwood Creek, Kansas.
- 1877. Myalina Permiana. Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 276, pl. 6, fig. 7.

Permo-Carboniferous: Foothills southeast of Salt Lake City, Wahsatch Range, Utah.

- 1881. Myalina permiana. White, U. S. Geog. Surv. W. 100 Merid., vol. 3, Supp., Appendix, p. xxv, pl. 3, figs. 1a-d. Carboniferous: Coyote Creek, New Mexico.
- 1891. Myalina permiana. White Bull. U. S. Geol. Surv. No. 77, p. 28, pl. 4, figs. 16-19.

Permian: Goodwin Creek and Military Crossing, Baylor County, Texas; Camp Creek, Archer County, Texas.

# Myalina pernaformis Cox.

1857. Myalina pernaformis. Cox, Geol. Rep. Ky., vol. 3, p. 569, pl. 8, fig. 8. Coal Measures: Providence, Hopkins County, Kentucky.

#### Myalina pterineiformis Winchell.

1862. Myalina pterineæformis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 412. Marshall Group: Point aux Barques, Michigan.

#### Myalina rara Winchell.

1862. Myalina aviculoides. Winchell, Proc. Acad. Nat. Sci. Phil., p. 412. (Not M. aviculoides M. & H., 1860.)

Marshall S. S.: Marshall, Michigan.

1870. Myalina rara. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 390.

### Myalina recta Shumard.

- 1858. Myalina recta. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 212. Permian: Clifton Park, Kansas.
- 1859. Myalina recta. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 396. Permian: Guadalupe Mountains.

## Myalina recurvirostris Meek and Worthen.

- 1860. Myalina recurvirestra. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 456.
  - Coal Measures: Near Springfield, Illinois.
- 1866. Myalina recurvirestris. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 344, pl. 26, figs. 9a-c.
  - Upper Coal Measures: Lasalle, Illinois.
- 1884. Myalina roomvirostris. White, 13th Rep. Geol. Surv. Ind., p. 140, pl. 29, figs. 3, 4.
  - Upper Coal Measures: Indiana.
- 1894. Myalinareourvirostris. Keyes, Mo. Geol. Surv., vol. 5, p. 117, pl. 45, figs. 1a, b. Upper Coal Measures: Kansas City, Missouri.

## Myalina sancti-ludovici Worthen.

- 1873. Myalina St. Ludovici. Worthen, Geol. Surv. Ill., vol. 5, p. 540, pl. 22, fig. 3. St. Louis L. S.: Alton, Ill.; St. Louis, Missouri.
- 1894. Myalina sancti-ludovici. Keyes, Mo. Geol. Surv., vol. 5, p. 117. St. Louis L. S.: St. Louis, Missouri.

## Myalina squamosa Sowerby.

- 1858. Mytilus squamosus (†). Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 188. Lower Permian: Valley of Cottonwood, Kansas.
- 1859. Myalina squamosa. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 396. White Permian L. S.: Guadalupe Mountains.

### Myalina subquadrata Shumard.

- 1855. Myalina subquadrata. Shumard, Geol. Surv. Mo., p. 207, pl. C, fig. 17.
  Upper Coal Measures: On Missouri River, 2 miles below the mouth of the Little Nemaha.
- 1864. Myalina subquadrata. Meek and Hayden, Pal. Up. Mo., p. 32, figs. A, B. Coal Measures: Leavenworth City, Kansas.
- 1866. Myalina subquadrata. Geinitz, Carb. und Dyas in Nebr., p. 27, tab. 3, figs. 25, 26.

Nebraska City, Nebraska.

- 1872. Myalina subquadrata. Meek, U. S. Geol. Surv. Nebr., p. 202, pl. 4, fig. 12; pl. 9, fig. 6.
  - Upper Coal Measures: Nebraska City, Bennett's Mill and Bellevue, Nebraska.
- 1884. Myalina subquadrata. White, 13th Rep. Geol. Surv. Ind., p. 140, pl. 29, figs. 1, 2; pl. 30, figs. 1, 2.
  Upper Coal Measures: Knox, Gibson, and Posey counties, Indiana.
- 1886. Myalina subquadrata. Heilprin, 2d Geol. Surv. Penn., Ann. Rep. 1885, p. 456; p. 446, fig. 15; p. 454, fig. 15a.
- Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.

  1886. Myalina subquadrata. Heilprin, Proc. and Coll. Wyo. Hist. and Geol. Soc.,
  - vol. 2, pt. 2, p. 273, fig. 15a; p. 274, fig. 15.
    Mill Creek L. S. Upper Coal Measures: Wilkesbarre, Pennsylvania.
- 1894. Myalina subquadrata. Keyes, Mo. Geol. Surv., vol. 5, p. 118, pl. 44, figs. 1a, b, 2a, b.

Upper Coal Measures: Kansas City, Missouri.

#### Myalina swallovi McChesney.

- 1860. Myalina swallovi. McChesney, Desc. New Pal. Foss., p. 57.
  Coal Measures: Charbonier, and 12 miles northwest of Richmond, Missouri.
- 1865. Myalina swallovi. McChesney, Ill. New Spec. Foss., pl. 2, fig. 6a-b.
- 1866. Aucella Hausmani. Geinitz, Carb. und Dyas in Nebr., p. 25, tab. 2, fig. 8. Nebraska City. Nebraska.

## Myalina swallovi McChesney—Continued.

- 1866. Myalina Swallovi. Meek and Worthen, Geol. Surv., Ill., vol. 2, p. 341, pl. 27, figs. 1a-d.
  - Coal Measures: Saline Creek, Gallatin County, Illinois.
- 1868. Myalina Swallowi. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 41, pl. 2, figs. 6a, b.
  - Coal Measures: Charbonier, and 12 miles northwest of Richmond, Missouri.
- 1872. Myalina (?) swallori. Meek, U. S. Geol. Surv. Nebr., p. 201, pl. 9, figs. 7a, b. Upper Coal Measures: Nebraska City, Nebraska. Upper and Lower Coal Measures: Illinois; Kentucky; Iowa; Nebraska; Kansas: Missouri.
- 1877. Myalina? Swallovi. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 152, pl. 11, fig. 8a.
  Carboniferous: Camp Apache, Maricopa County, Arizona.
- 1884. Myalina (†) Swallovi. White, 13th Rep. Geol. Surv. Ind., p. 141, pl. 30, figs. 6-8.
  Coal Measures: Park, Vermilion, and Vigo counties, Indiana.
- 1877. Myalina (†) swallovi. Herrick, Bull. Den. Univ., vol. 2, p. 37, pl. 4, fig. 6. Coal Measures: Flint Ridge, Ohio.
- 1888. Myalina swallovi. Keyes, Proc. Acad. Nat. Sci. Phil., p. 232. Lower Coal Measures: Des Moines, Iowa.
- 1894. Myalina swallovi. Keyes, Mo. Geol. Surv., vol. 5, p. 119, pl. 43, figs. 3a-o. Lower Coal Measures: Charbonier, Missouri.
  Upper Coal Measures: Richmond and Kansas City, Missouri.

## Myalina wyomingensis Lea.

- 1853. Modiola Wyomingensie. Lea, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 205, pl. 20, fig. 1a.
  Coal Formation: Wilkesbarre, Pennsylvania.
- 1886. Modiola wyomingensis. Claypole, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 247.
  Lower Coal Measures: Wilkesbarre, Pennsylvania.

## Myalina (species undetermined).

- 1876. Myalina —— † White, Powell's Rep. Geol. Uinta Mts., p. 91.
  Upper and Lower Aubrey Group: Confluence of Grand and Green rivers,
  Utah.
- 1877. Myalina——(†) White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 152. Carboniferous: Camp Apache, Maricopa County, Arizona.
- 1877. Myalina sp. f Herrick, Bull. Den. Univ., vol. 2, p. 37, pl. 4, fig. 20. Coal Measures: Flint Ridge, Ohio.
- 1887. Myalina (cf. recurvirostris). Herrick, Bull. Den. Univ., vol. 2, p. 37, pl. 5, fig. 4.
  Coal Measures: Flint Ridge, Ohio.
- 1887. Myalina sp. Herrick, Bull. Den. Univ., vol. 2, p. 146, pl. 14, figs. 1, 1a. Coal Measures: Flint Ridge, Ohio.
- 1887. Myalina? sp.? Herrick, Bull. Den. Univ., vol. 2, p. 146, pl. 14, fig. 24.
  Coal Measures: Flint Ridge, Ohio.
- 1887. Myalina? Herrick, Bull. Den. Univ., vol. 2, pl. 4, fig. 12. Coal Measures: Flint Ridge, Ohio.

## MYLAURIS Scudder, 1868.

#### Mylacris ampla Scudder.

1895. Mylacris ampla. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 45, pl. 2, fig. 1. Lower Coal Measures: Mazon Creek, Illinois.

## Mylacris anthracophila Scudder.

- 1868. Mylaoris anthracophila. Scudder, Geol. Surv. Ill., vol. 3, p. 568, figs. 5, 6. Carboniferous: Mazon Creek, Grundy County, Illinois.
- 1879. Mylacris anthracophilum. Soudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 45, pl. 5, figs. 6-8.
  - Lower Coal Measures: Colchester, Illinois.
- 1884. Mylacris anthracophilum. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 307. Lower Coal Measures: Colchester, Illinois.
- 1890. Mylacris anthracophilum. Scudder, Foss. Insc. N. A., vol. 1, pp. 65, 271, pl. 5, figs. 6-8.
  - Lower Coal Measures: Colchester, Illinois.
- 1895. Mylaoris anthracophila. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 43, pl. 1, figs. 1-4.
  Lower Coal Measures: Colchester, Illinois.

# Mylacris antiqua Scudder.

- 1884. Mylacris antiquum. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 300.

  Carboniferous: Mazon Creek, Illinois.
- 1890. Mylacris antiquum. Scudder, Foss. Insc. N. A., vol. 1, p. 264. Carboniferous: Mazon Creek, Illinois.
- 1895. Mylacris antiqua. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 46, pl. 2, figs. 5, 6.
  Lower Coal Measures: Mazon Creek, Illinois.

## Mylacris bretonensis Scudder.

- \*1874. Blattina bretonensis. Scudder, Can. Nat., vol. 7, p. 271, fig. 1. Carboniferous: Sydney. Cape Breton.
- 1878. Blattina Bretonensis. Dawson, Supp. to 2d Ed. Acad. Geol., p. 53, fig. 5. Carboniferous: Nova Scotia.
- 1879. Mylacris bretonense. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 41, pl. 5, fig. 1.
  - Middle Coal Measures: Sydney, Cape Breton.
- 1884. Mylacris bretonense. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 300. Carboniferous: Sydney, Cape Breton.
- 1890. Mylacris bretonensis. Scudder, Foss. Insc. N. A., vol. 1, pp. 61, 264, pl. 5, fig. 1. Middle Coal Measures: Sydney, Cape Breton.
- 1895. Mylacris bretonensis. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 41.

  Coal Measures: Sydney, Cape Breton.

## Mylacris carbonum Scudder.

- 1884. Mylacris carbonum. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 304, pl. 27, figs. 6, 7, 10.
  - Carboniferous: Cannelton, Pennsylvania.
- 1890. Mylacris carbonum. Scudder, Foss. Insc. N. A., vol. 1, p. 268, pl. 13, figs. 6, 7, 10.
  - Carboniferous: Wilkesbarre and Cannelton, Pennsylvania.
- 1895. Mylacris carbonum. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 47. Coal Measures: Cannelton and Wilkesbarre, Pennsylvania.

# Mylacris elongata Scudder.

1895. Mylacris elongata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 41, pl. 1. fig. 6. Lower Coal Measures: Mazon Creek, Illinois.

### Mylacris gurleyi Scudder.

1895. Mylacris gurleyi. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 43, pl. 1, fig. 5. Lower Coal Measures: Mazon Creek, Illinois.

## Mylacris heeri Scudder.

\*1874. Blattina heeri. Scudder, Can. Nat., vol. 7, p. 272; fig. 2, p. 271. Carboniferous: Sydney, Cape Breton.

## Mylacris heeri Scudder—Continued.

- 1878. Blattina Heeri. Dawson, Supp. 2d Ed. Acad. Geol., p. 53, fig. 6. Carboniferous: Nova Scotia.
- 1879. Mylacris Heeri. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 43, pl. 5, fig. 11.

Middle Coal Measures: Sydney, Cape Breton.

- 1884. Mylaoris Heeri. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 300. Carboniferous: Sidney, Cape Breton.
- 1890. Mylacris Heeri. Scudder, Foss. Insc. N. A., vol. 1, pp. 63, 264, pl. 5, fig. 11.
  Middle Coal Measures: Sydney, Cape Breton.
- 1895. Mylacris heeri. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 46. Coal Measures: Sydney, Cape Breton.

## Mylacris lucifuga Scudder.

- 1884. Mylacris lucifugum. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 301, pl. 27, fig. 8.
  Carboniferous: Pittston. Pennsylvania.
- 1890. Mylacris lucifugum. Scudder, Foss. Insc. N. A., vol. 1, p. 265, pl. 13, fig. 8. Carboniferous: Pittston, Pennsylvania.
- 1895. Mylacris lucifuga. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 47. Coal Measures: Near Pittston, Pennsylvania.

## Mylacris mansfieldi Scudder.

- 1879. Mylacris Mansfieldii. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 47, pl. 5, fig. 15.
  - Lower Coal Measures: Cannelton, Pennsylvania.
- 1884. Mylaoris Mansfieldi. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 308. Lower Coal Measures; Cannelton, Pennsylvania.
- 1890. Mylacris mansfieldi. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 377. Coal Measures: Near Georgetown, Vermilion County, Illinois.
- 1890. Mylacris manefieldi. Scudder, Foss. Insc. N. A., vol. 1, pp. 67, 272, 401, pl. 5, fig. 15.
  Lower Coal Measures: Cannelton, Pennsylvania, and near Georgetown,
- Vermilion County, Illinois.

  1895. Mylacris mansfieldi. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 47.

  Lower Coal Measures: Cannelton, Pennsylvania.

## Mylacris ovalis Scudder.

- 1884. Mylacris ovals. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 308, pl. 27, fig. 5.
  - Carboniferous: Cannelton, Pennsylvania.
- 1890. Mylacris ovalis. Scudder, Foss. Insc. N. A., vol. 1, p. 272, pl. 13, fig. 5. Carboniferous: Cannelton, Pennsylvania.
- 1895. Mylacris ovalis. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 47. Lower Coal Measures: Cannelton, Pennsylvania.

## Mylacris packardii Scudder.

- 1893. Mylacrie packardii. Soudder, Bull. U. S. Geol. Surv. No. 101, p. 11, pl. 1, figs. e, g.
  - Carboniferous: Bristol and Pawtucket, Rhode Island.
- 1895. Mylacris packardii. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 41, pl. 1, figs. 2, 3.

Lower (†) Coal Measures: Bristol, Rhode Island.

#### Mylacris pennsylvanica Scudder.

1879. Mylacris pennsylvanicum. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 44, pl. 5, figs. 13, 14.
Lower Coal Measures: Cannelton, Pennsylvania.

## Mylacris pennsylvanica Scudder—Continued.

- 1884. Mylaoris pennsylvanicum. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 302, pl. 27, fig. 11.
  - Carboniferous: Pittston, Pennsylvania.
- 1890. Mylacris pennsylvanicum. Scudder, Foss. Insc. N. A., vol. 1, pp. 64, 266, pl. 5, figs. 13, 14; pl. 13, fig. 11.
  Carboniferous: Cannelton, Pennsylvania.
- 1895. Mylacris pennsylvanica. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 47. Lower Coal Measures: Cannelton, Pennsylvania.

## Mylacris priscovolans Scudder.

- 1884. Mylacris priscovolans. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 307, pl. 27, fig. 9.
  - Carboniferous: Cannelton, Pennsylvania.
- 1890. Mylacris priscovolans. Scudder, Foss. Insc. N. A., vol. 1, p. 271, pl. 13, fig. 9. Carboniferous: Cannelton, Pennsylvania.
- 1895. Mylaoris priscovolans. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 46. Lower Coal Measures: Cannelton, Pennsylvania.

## Mylacris (species undetermined).

1895. Mylacridæ sp. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 55, pl. 2, fig. 4.
Lower Coal Measures: Mazon Creek, Illinois.

### MYTILARCA Hall, 1870.

## Mytilarca fibristriata White and Whitfield.

- 1862. Mytilus fibristriatus. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 296.
  - Chemung Group: Burlington, Iowa.
- 1862. Mytilus Whitfieldianus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 413.
  Marshall Group: Holland, Ottawa County, and Marshall, Michigan.
- 1863. Mytilus Whitfieldianus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 11.
  Yellow S. S.: Burlington, Iowa.
- 1884. Mytilarca fibristriata. Hall, Pal. N. Y., vol. 5, pt. 1, p. 284, pl. 33, figs. 6, 7; pl. 87, fig. 6.
  - Yellow S. S.: Burlington, Iowa.
- 1888. Mytilarca fibristriatus. Herrick, Bull. Den. Univ., vol. 4, p. 31, pl. 4, fig. 21. Waverly Group: Moot's Run, Licking County, Ohio.
- 1889. Mytilarca fibristriata. Herrick, Am. Gool., vol. 3, pl. 2, fig. 21.
- 1895. Mytilarca fibristriata. Herrick, Geol. Surv. Ohio, vol. 7, pl. 16, fig. 21. Cuyahoga Shale: Moot's Run, Ohio.

#### Mytilarca jessiese Miller and Gurley.

- 1896. Mytilarca jessieæ. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 14, pl. 2, figs. 1-6.
  - Chouteau L. S.: Near Sedalia, Missouri.

# Mytilarca occidentalis White and Whitfield.

- 1862. Mytilus occidentalis. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 297.
  - Chemung Group: Burlington, Iowa.
- 1884. Mytilarca occidentalis. Hall, Pal. N. Y., vol. 5, pt. 1, p. 263, pl. 33, figs. 3-5; pl. 87, fig. 11.
  - Yellow S. S.: Burlington, Iowa.
- 1888. Mytilarca occidentalis? Herrick, Bull. Den. Univ., vol. 4, p. 32, pl. 11, fig. 1. Waverly Group: Medina County, Ohio.

## MYTILUS Linnaeus, 1758.

Mytilus concavus. See Myalina concava.

Mytilus fibristriatus. See Mytilarca fibristriata.

Mytilus occidentalis. See Mytilarca occidentalis.

Mytilus ottawensis Shumard.

1858. Mytilus Ottawaensis. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 211. Upper Coal Measures: Valley of Verdigris River, Kansas.

Mytilus permianus. See Myalina permiana.

Mytilus squamosus. See Myalina squamosa.

Mytilus tenuiradiatus Shumard.

1858. Mytilus tenuiradiatus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 211. Upper Coal Measures: Valley of Verdigris River, Kansas.

Mytilus whitfieldanus. See Mytilarca fibristriata.

## NAIADITES Dawson, 1860.

Naiadites angulata. See Carbonicola angulata.

Naiadites arenacea. See Anthracomya arenacea.

Naiadites carbonarius Dawson.

\*1860. Naiadites carbonarius. Dawson, Supp. Acad. Geol Coal Measures: Nova Scotia.

1863. Anthracopteria carbonaria. Salter, Quart. Jour. Geol. Soc. Lond., vol. 19, p. 79, fig. 3.

Coal Measures: Nova Scotia.

1868. Naiadites (Anthracoptera) carbonaria. Dawson, Acad. Geol., p. 204, fig. 42. Coal Measures: Nova Scotia.

1883. Naiadites carbonaria. White, 3d Ann. Rep. U. S. Geol. Surv., p. 425, pl 2, fig. 15.

1894. Natadites carbonarius. Hind, Quart. Jour. Geol. Soc. Lond., vol. 50, p. 441, pl. 20, figs. 2, 3, 11c.

1894. Naiadites carbonarius. Dawson, Rev. Biv. Moll. Coal-Form. Nova Scotia, p. 6, figs. 1-3.

. Coal Measures: South Joggins, Nova Scotia; Pictou and Mabon, Cape Breton.

Naiadites elongata. See Anthracomya elongata.

## Naiadites fragilis Meek and Worthen.

\*1866. Anthracoptera? fragilis. Meek and Worthen, Proc. Chicago Acad. Sci., vol. 1, p. 18.

Keokuk Group: Near Warsaw, Illinois.

1868. Anthracoptera? fragilis. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 534, pl. 19, fig. 4.

Keokuk Group: Near Warsaw, Illinois.

Naiadites lævis. See Anthracomya lævis

#### Naiadites longus Dawson.

1894. Naiadites longus. Dawson, Rev. Biv. Moll. Coal-Form. Nova Scotia, p. 8, fig. 4.

Coal Measures: South Joggins, Nova Scotia; Cape Breton.

Bull. 153---24

## Naiadites mytiloides Dawson.

1894. Naiadites mytiloides. Dawson, Rev. Biv. Moll. Coal-Form. Nova Scotia, p. 9, fig. 5.

Coal Measures: Chimney Corner, Cape Breton.

Naiadites obtusa. See Anthracomya obtenta.

Naiadites ovalis. See Anthracomya ovalis.

Naiadites polita White.

1880. Anthracoptera polita. White, Cont. to Inv. Pal., No. 8, p. 166, pl. 42, figs. 5a, b.

Coal Measures: Major's Mill, Vermilion County, Illinois.

# (NATICA Adanson, 1757.)

Natica altonousis. See Naticopsis altonousis.

Natica carlyana. See Strophostylus carleyana.

Natica chesterensis. See Naticopsis chesterensis.

Natica littonana. See Sphærodoma littonana.

Natica magister. See Naticopsis ventricosa.

Natica shumardi. See Naticopsis shumardi.

Natica ventrica. See Naticopsis ventricosa.

## NATICOPSIS McCoy, 1844.

# Naticopsis altonensis McChesney.

1865. Natica Altonensis. McChesney, Ill. New Spec. Foss., p. 0, pl. 2, tigs. 14a, b. Coal Measures: Alton, Illinois.

1868. Naticopsis altonesis. McChesney, Trans, Chicago Acad. Sci., vol. 1, p. 50, pl. 2, figs. 14a-c.

Coal Measures: Alton, Illinois.

1873. Naticopsis Altonensis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 595, pl. 28, fig. 11.

Coal Measures: Macoupin County, Illinois.

1881. Naticopsis altonensis. White, U. S. Geog. Surv. W. 100 Merid., vol. 3, Supp. Appendix, p. xxxv, pl. 3, fig. 6a.
Carboniferous: Near Taos, New Mexico.

## Naticopsis altonensis var. giganteus Meek and Worthen.

1873. Naticopsis Altonensis? var. gigantens. Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 28, figs. 12a, b. Coal Measures.

Naticopsis carleyana. See Strophostylus carleyana.

#### Naticopsis chesterensis Swallow.

1863. Natica Chesterensis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 100. Kaskaskia L. S.: Chester, Illinois; Ste. Genevieve, Missouri.

#### Naticopsis depressa Winchell.

1863. Natioopsis depressus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 22. Yellow S. S: Burlington, Iowa.

1889. Naticopsis depressa. Keyes, Proc. Acad. Nat. Sci. Phil., p. 293. Kinderhook Group: Burlington, Iowa.

#### Naticopsis dispassa Dawson.

1868. Naticopsis dispassa. Dawson, Acad. Geol., p. 309. fig. 120. Carboniferous L. S.: Pugwash and Windsor, Nova Scotia.

uticopsis hollidayi. See Trachydoma nodosa var. hollidayi.

## Naticopsis howi Hartt.

1868. Naticopsis Howi. Hartt, Dawson's Acad. Geol., p. 309, fig. 119.
Carboniferous L. S.: Windsor, Gay's Head, De Bert River, etc., Nova
Scotia

Naticopsis littonana var. genevievensis. See Sphærodoma littonana var. genevievensis.

Naticopsis mudisonensis. See Strophostylus madisonensis.

Naticopsis monilifera. See Pleurotomaria monilifera.

Naticopsis nana. See Strophostvlus nana.

Naticopsis nodosa. See Trachydomia nodosum.

Naticopsis nodosa var. hollidayi. See Trachydomia nodosum var. hollidayi.

## Naticopsis ortoni Whittield.

1882. Natioopsis Ortoni. Whitfield, Ann. N. Y. Acad. Sci., vol. 2, p. 230. Coal Measures: Falls Township, Hocking County, Ohio.

1891. Naticopeis Ortoni. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 605, pl. 16, figs. 12.13.

Coal Measures: Hocking County, Ohio.

1895. Naticopsis Ortoni. Whitfield, Geol. Surv. Ohio, vol. 7, p. 498, pl. 12, figs. 12, 13.

Coal Measures: Falls Township, Hocking County, Ohio.

## Naticopsis pricii Shumard.

1858. Naticopsis' (Nerita) Priosi. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 202.

Upper Coal Measures: Boone County, Missouri; Cottonwood Creek and Verdigris River, Kansas.

Naticopsis remex. See Strophostylus remex.

## Naticopsis shumardi McChesney.

1860. Natica shumardi. McChesney, Desc. New Pal. Foss., p. 62. Coal Measures: La Salle, Illinois.

1865. Natica shumardi. McChesney, Ill. New Spec. Foss., pl. 2, figs. 15a-h.

1868. Naticopsis Shumardi. McChesney, Trans. Chicago Acad. Sci., vol. 1, p, 49, pl. 2, figs. 15a, b.

Coal Measures: La Salle, Illinois.

1891. Naticopeis shumardi. White, Bull. U. S. Geol. Surv. No .77, p. 24, pl. 3, fig. 11.

Permian: Goodwin Creek, Baylor County, Texas.

Naticopsis subovatus. See Strophostylus subovatus.

## Naticopsis torta Meek.

1871. Platyceras tortum. Meek, Proc. Acad. Nat. Sci. Phil., p. 171. Coal Measures: Greentown, Summit County, Ohio.

1875. Platyceras tortum. Meek, Pal. Ohio, vol. 2, p. 345, pl. 20, figs. 1a-c. Coal Measures: Greentown, Stark County, Ohio.

1890. Naticopsis torta. Keyes, Proc. Acad. Nat. Sci. Phil., p. 180.

## Naticopsis ventricosa Norwood and Pratten.

1855. Natica ventrica. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 76, pl. 9, figs. 10a, b.

Coal Measures: 1 mile south of New Harmony, Indiana.

1858. Natica Magister. Stevens, Am. Jour. Sci. (2), vol. 25, p. 261. Archimedes L. S.: Near Makanda, Illinois.

## Naticopsis ventricosa Norwood and Pratten-Continued.

1873. Naticopsis ventricosus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 592, pl. 28, fig. 13.

Coal Measures: 1 mile south of New Harmony, Indiana.

1889. Naticopsis ventricosa. Keyes, Am. Geol., vol. 4, p. 195, fig. 3.

1894. Naticopsis ventricosa. Keyes, Mo. Geol. Surv., vol. 5, p. 199.
Upper Coal Measures: Kansas City and Clinton, Missouri.

Naticopsis wheeleri. See Trachydomia wheeleri.

## Naticopsis? ziczac Whitfield.

1882. Naticopsis zic-zac. Whitfield, Ann. N. Y. Acad. Sci., vol. 2, p. 223.

Maxville L. S.: Newtownville, Ohio.

1891. Natioopsis ziczac. Whitfield Ann. N. Y. Acad. Sci., vol. 5, p. 590, pl. 14, figs. 15, 16.

Maxville L. S.: Newtonville, Ohio.

1895. Naticopsis ziczac. Whitfield, Geol. Surv. Ohio, vol. 7, p. 477, pl. 10, figs. 15, 16.

Maxville L. S.: Newtonville, Ohio.

# Naticopsis (species undetermined).

1888. Naticopsis 7 sp. n. Herrick, Bull. Den. Univ., vol. 3, p. 87, pl. 12, fig. 37. Waverley Group: Licking County, Ohio.

1897. Naticopsis sp. Smith, Proc. Am. Phil. Soc., vol. 35, p. 41.

Upper Coal Measures: Scott County, Arkansas.

## NAUTILUS Breynius, 1732.

Nautilus altidorsalis. See Trematoceras altidorsalis.

Nautilus avonensis. See Endolobus avonensis.

Nautilus biserialis. See Tainoceras occidentalis.

#### Nautilus bisulcatus Herrick.

1888. Nautilus (†) bisulcatus. Herrick, Bull. Den. Univ., vol. 3, p. 20. Maxville L. S.: Fultonham, Ohio.

1888. Nautilus bisuloatus. Herrick, Bull. Den. Univ., vol. 4, pl. 11, fig. 16. Chester L. S.: Ohio.

#### Nautilus blairi Miller.

1892. Solenochilus blairi. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 75, pl. 12, fig. 2.

Chouteau L.S.: Pin Hook Bridge, 6 miles from Sedalia, Missouri.

1894. Solenochilus blairi. Miller, 18th Rep. Geol. Surv. Ind., p. 329, pl. 12, fig. 2. Chouteau L. S.: Pin Hook Bridge, 6 miles from Sedalia, Missouri.

# Nautilus burlingtonensis Owen.

1852. Gyroceras burlingtonensis. Owen, Geol. Surv. Wis., Iowa, and Minn., p. 581, tab. 5, fig. 10.

Lower Carboniferous (Oolite bed): Burlington, Iowa.

1894. Nautilus † burlingtonensis. Keyes, Mo. Geol. Surv., vol. 5, p. 221. Chouteau L. S.: Sedalia, Missouri.

Nautilus canaliculatus. See Solenoceras canaliculatum.

Nautilus capax. See Asymptoceras capax.

Nautilus chesterensis. See Leuroceras chesterensis.

#### Nautilus clarkanus Hall.

1856. Nautilus Clarkanus. Hall, Trans. Albany Inst., vol. 4, p. 32.
St. Louis L. S.: Spergen Hill, Indiana.

#### Nautilus clarkanus Hall—Continued.

1882. Nautilus Clarkanus. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 92, pl. 8, fig. 1.

St. Louis Group: Spergen Hill, Indiana.

1883. Nautilus clarkanus. Hall, 12th Rep. Geol. Surv. Ind., p. 373, pl. 31, fig. 1. St. Louis Group: Spergen Hill and Lanesville, Indiana.

Nautilus collectus. See Solenocheilus collectum.

Nautilus coxanus. See Tempocheilus coxanum.

#### Nautilus danvillensis White.

1878. Nautilus Danvillensis. White, Proc. Acad. Nat. Sci. Phil., p. 36. Coal Measures: Danville, Illinois.

1880. Nautilus danvillensis. White, Cont. to Inv. Pal., No. 8, p. 170, pl. 42, fig. 7a.

Coal Measures: Danville, Illinois.

#### Nautilus decoratus Cox.

1857. Nautitus decoratus. Cox, Geol. Rep. Ky., vol. 3, p. 572, pl. 9, figs 4-4b. Coal Measures: Mines of Kentucky Coal Company, Union County, Kentucky.

1868. Nautilus decoratus. Rogers, Geol. Rop. Penn., vol. 2, p \$33, fig. 692.

Nautilus digonus. See Triboloceras digonum.

Nautilus disciformis. See Aphelæceras disciformis.

Nautilus discoidalis. See Trematoceras discoidalis.

Nautilus divisus. See Ephippioceras divisus.

## Nautilus eccentricus Meek and Hayden.

1858. Nautilus eccentricus. Meek and Hayden, Trans. Albany Inst., vol. 4, p. 83. Permian: Smoky Hill Fork.

1864. Nautilus eccentricus. Meek and Hayden, Pal. Up. Mo., p. 65, pl. 2, figs. 14a, b.

Permian: Near mouth of Smoky Hill Fork of Kansas River, Kansas.

#### Nautilus faberi Miller.

1889. Nautilus faberi. Miller, N. A. Geol. and Pal., p. 443, fig. 746. Coal Measures: Elk Horn Creek, Kentucky.

Nautilus ferratus. See Ephippioceras ferratus.

Nautilus forbesianus. See Temnocheilus forbesianus.

## Nautilus gilpini Swallow.

1860. Nautilus Gilpini. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 658. Coal Measures: Wayne City, Missouri.

Nautilus globatus. See Coloceras globatus.

Nautilus highlandensis. See Domatoceras highlandensis.

## Nautilus illinoiensis McChesney.

1860. Nautilus illinoiensis. McChesney, Desc. New Pal. Foss., p. 64. Upper Coal Measures: Lasalle, Illinois.

## Nautilus indianensis Miller.

1892. Streptodiscus indianensis. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 71, pl. 11, fig. 1.
Keokuk L. S.: West Point, Indiana.

1894. Streptodiscus indianensis. Miller, 18th Rep. Geol. Surv. Ind., p. 325, pl. 11, fig. 1.

Keokuk L. S.: West Point, Indiana.

## Nautilus ingentior Winchell.

1862. Nautilus ingentior. Winchell, Am. Jour. Sci. (2), vol. 33, p. 361. Marshall S. S.: Marshall. Michigan.

Nautilus lasallensis. See Domatoceras lasallensis.

Nautilus latus. See Temnocheilus latus.

Nautilus leidyi. See Solenocheilus leidyi.

Nautilus meekianus. See Trematoceras meekianus.

Nautilus missouriensis. See Endolobus missouriensis.

### Nautilus montgomeryensis Worthen.

1884. Nautilus montgomeryensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 4.

Upper Coal Measures: Montgomery County, Illinois.

1890. Nautilus montgomeryensis. Worthen, Geol. Surv. Ill., vol. 8, p. 148, pl. 26, fig. 2; pl. 27, fig. 1.

Upper Coal Measures: Montgomery County, Illinois.

Nautilus niotensis. See Edaphoceras niotensis.

Nautilus nodocarinatus. See Tainoceras occidentalis.

#### Nautilus nodosodorsatus Shumard.

1858. Nautilus nodoso-dorsatus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 198. Upper Coal Measures: Valley of Verdigris and Kansas rivers, near Pottawattamie Reservation. Kansas.

Nautilus occidentalis. See Tainoceras occidentalis.

### Nautilus ortoni Whitfield.

1882. Nantilus Ortoni. Whitfield, Ann. N. Y. Acad. Sci., vol. 2, p. 231. Coal Measures: Springfield, Ohio.

1891. Nautilus Ortoni. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 601, pl. 16, fig. 20. Coal Measures: Springfield, Ohio.

1895. Nautilus Ortoni. Whitfield, Geol. Surv. Ohio. vol. 7, p. 486, pl. 12, fig. 20. Coal Measures: Springfield, Ohio.

#### Nautilus parallelus Beecher.

1888. Nautilus parallelus. Beecher, Pal. N. Y., vol. 5, pt. 2, Supp., p. 38, pl. 126, figs 3-5.

?Coal Measures: ?Ohio.

## Nautilus pauper Whitfield.

1882. Nautilus pauper. Whitfield, Ann. N. Y. Acad. Sci., vol. 2, p. 226. Maxville L. S.: Near Rushville, Ohio.

1891. Nautilus pauper. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 595, pl. 14, fig. 23. Maxville L. S.: Near Rushville, Ohio.

1895. Nautilus pauper. Whitfield, Geol. Surv. Ohio, vol. 7, p. 481, pl. 10, fig. 23. Maxville L. S.: Near Rushville, Ohio.

Nautilus peramplus. See Endolubus spectabilis.

## Nautilus permianus Swallow.

1858. Nautilus Permianus. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 196. Permian: Near Smoky Hill Fork, Kansas.

Nautilus planidorsalis. See Trematoceras planidorsalis.

## Nautilus planorbiformis Meek and Worthen.

1860. Nautilus (Discus) planorbiformis. Meek and Worthen, Proc. Acad. Nat. Sci Phil., p. 469.

Coal Measures: Alpine, Iowa.

# Nautilus planorbiformis Meek and Worthen-Continued.

1866. Nautilus planorbiformis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 386, pl. 29, figs. 4a-c.

Coal Measures: Alpine, Iowa.

### Nautilus planovolvis Shumard.

1858. Nautilus planovolvis. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 198. Upper Coal Measures: Near Belleville, Nebraska.

1873. Nautilus planorolvis.? Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 30, figs. 3a, b.
Coal Measures.

Nautilus ponderosus. See Titanoceras ponderosum.

Nautilus quadrangulus. See Tainoceras occidentalis.

Nautilus rockfordensis. See Oncodoceras rockfordensis.

Nautilus sangamonensis. See Metacoceras sangamonensis.

Nautilus seebachanus. See Pteronautilus seebachanus.

Nautilus spectabilis. See Endolobus spectabilis.

Nautilus springeri. See Asymptoceras springeri.

Nautilus striatulus. See Trematodiscus striatulus.

Nautilus strigatus. See Trematoceras strigatus.

Nautilus subglobosus Meek and Worthen.

1860. Nautilus subglobosus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 469. Chester L. S.: Chester. Illinois.

## Nautilus subquadrangularis Whitfield.

1882. Nautilus (Gyrocerast) subquadrangularis. Whitfield, Ann. N. Y. Acad. Sci., vol. 2, p. 232.

Coal Measures: Canfield, Ohio.

1891. Nautilus (Gyroceras?) subquadrangularis. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 602, pl. 15, fig. 16.
Coal Measures: Canfield. Ohio.

1895. Nautilus (Gyroceras?) subquadrangularis. Whitfield, Geol. Surv. Ohio, vol. 7, p. 487, pl. 11, fig. 16.
Coal Measures: Canfield, Ohio.

#### Nautilus subsulcatus Winchell.

1862. Nautilus subsulcatus (t). Winchell, Am. Jour. Sci. (2), vol. 33, p. 361.
Marshall S. S.: Marshall, Michigan.

Nautilus sulcatus. See Trematoceras sulcatus.

## Nautilus toddi Miller.

1892. Nautilus toddi. Miller, Adv. Sheets, 18th Rep. Gool. Surv. Ind., p. 72, pl. 11. figs. 2-4.

Upper Coal Measures: Wyandotte County, Kansas.

1894. Nautilus toddi. Miller, 18th Rep. Geol. Surv. Ind., p. 326, pl. 11, figs. 2-4. Upper Coal Measures: Wyandotte County, Kansas.

Nautilus trigonus. See Stroboceras trigonus.

Nautilus trisulcatus. See Stroboceras trisulcatus.

#### Nautilus tuberculatus Owen.

1852. Discites tuberculatus. Owen, Geol. Rep. Wis., Iowa, and Minn., p. 581, tab. 5, fig. 14.

Carboniferous L. S.: Iowa Point, Missouri River.

Nautilus winslowi. See Temnocheilus winslowi.

## Nautilus (undetermined species).

- 1859. Nautilus sp. (†). Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 399. Dark Permian L. S.: Guadalupe Mountains.
- 1861. Nautilus sp. Newberry, Ives' Colo. Expl. Exped., p. 118.
  Upper Carboniferous: Agua Azul, near the base of Mount Taylor.
- 1868. Nautilus (undescribed species). McChesney, Trans. Chicago Acad. Sci., vol. 1, pl. 3, fig. 6.
  Coal Measures: Graysville, Illinois.
- 1873. Nautilus (sp. undet.). Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 19, figs. 2a, b.
  Keokuk Group.
- 1886. Nautilus sp. 7 Heilprin, 2d Geol. Surv. Penn., Ann. Rep. for 1885, p. 457.
  Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.
- 1886. Nautilus sp. (†). Heilprin, Proc. and Coll. Wyo. Hist. and Gool. Soc., vol. 2, pt. 2, p. 277.

Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.

- 1887. Nautilus sp. Herrick, Bull. Den. Univ., vol. 2, p. 17, pl. 2, fig. 17. Coal Measures: Flint Ridge, Ohio.
- 1888. Nautilus? sp. Herrick, Bull. Den. Univ., vol. 3, pl. 2, fig. 26. Waverly Group: Licking County, Ohio.
- 1888. Nautilus f sp. Herrick, Bull. Den. Univ., vol. 3, pl. 6, fig. 14.
  Waverly Group: Licking County. Ohio.
- 1888. Nautilus. Herrick, Bull. Den. Univ., vol. 4, pl. 7, fig. 3.
  Waverly Group: Moot's Run, Licking County, Ohio.
- 1888. Nautilus sp. Herrick, Bull. Den. Univ., vol. 4, pl. 7, fig. 8. Waverly Group: Newark, Ohio.
- 1891. Nautilus —— ? White, Bull. U. S. Geol. Surv. No. 77, p. 23, pl. 3, figs. 6-8.
  Permian: Military Crossing of the Big Wichita, Baylor County, Texas.
- 1891. Nautilus ——? White, Bull. U. S. Geol. Surv. No. 77, p. 24, pl. 2, figs. 4-6. Permian: Military Crossing, Baylor County, Texas.
- 1891. Nautilus ——? White, Bull. U. S. Geol. Surv. No. 77, p. 24, pl. 2, figs. 7-10.
  Permian: Goodwin Creek, Baylor County, Texas.
- 1891. Nautilus (Endolobus) —— f White, Bull. U. S. Geol. Surv. No. 77, p. 24, pl. 2, fig. 13.

Permian: Military Crossing, Baylor County, Texas.

- 1895. Nautilus sp. Herrick, Geol. Surv. Ohio, vol. 7, pl. 18, fig. 3. Cuyahoga Shale: Moot's Run, Licking County, Ohio.
- 1895. Nautilus sp. Herrick, Geol. Surv. Ohio, vol. 7, pl. 18, fig. 8. Burlington: Newark, Ohio.
- 1897. Nautilus sp. Smith, Proc. Am. Phil. Soc., vol. 35, p. 43. Upper Coal Measures: Crawford County, Arkansas.

## NECYMYLACRIS Scudder, 1880.

## Necymylacris heros Scudder.

- 1879. Nocymylaeris heros. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 54, pl. 5, fig. 9.
  Lower Coal Measures: Cannelton, Pennsylvania.
- 1890. Necymylacris heros. Scudder, Foss. Insc. N. A., vol. 1, p. 74, pl. 5, fig. 9. Lower Coal Measures: Cannelton, Pennsylvania.
- 1895. Necymylacris heros. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 55. Lower Coal Measures: Boston Mine, near Pittston, Pennsylvania.

## Necymylacris lacoana Scudder.

- 1879. Necymylacris lacoanum. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 53, pl. 5, fig. 12.
  - Lower Coal Measures: Pittston, Pennsylvania.
- 1890. Necymylacris lacoana. Scudder, Foss. Insc. N. A., vol. 1, p. 73, pl. 5, fig. 12. Lower Coal Measures: Pittston, Pennsylvania.
- 1895. Necymylacris lacoana. Scudder, Bull. U. S. Geol. Surv. No. 124, p 55. Lower Coal Measures: Boston Mine, near Pittston, Pennsylvania.

# NIPTEROCRINUS Wachsmuth, 1868.

## Nipterocrinus arboreus Worthen.

873. Nipterocrinus arboreus. Worthen, Geol. Surv. Ill., vol. 5, p. 436, pl. 4, fig. 8. Burlington L. S.: Burlington, Iowa.

## Nipterocrinus wachsmuthi Meek and Worthen.

- 1868. Nipterocrinus Wachsmuthi. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 342.
  - Upper Burlington Group: Burlington, Iowa.
- 1873. Niptercorinus Wachsmuthi. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 435, pl. 2, fig. 4.

Burlington L. S.: Burlington, Iowa.

## NODOSINELLA Brady, 1876.

### Nodosinella priscilla Dawson.

- 1868. Dentalina priscilla. Dawson, Acad. Geol., p. 285, fig. 82. Carboniferous L. S.: Windsor, Nova Scotia.
- 1876. Nodosinella priscilla. Brady, Monog. Carb. and Perm. Form., p. 105, pl. 7, figs. 8, 9.

Carboniferous L. S.: Windsor, Nova Scotia.

## NUCULA Lamark, 1801.

## Nucula anodontoides Meek.

\*1870. Nucula anodontoides. Meek, Rep. Regents Univ. W. Va. Coal Measures: Monongahela County, West Virginia.

Nucula arata. See Nuculana arata.

## Nucula beyrchi von Schauroth.

- 1866. Nucula Beyrichi. Geinitz, Carb. und Dyas in Nebr., p. 21, tab. 1, figs. 36, 37. Nebraska City, Nebraska.
- 1872. Nucula Beyrichi? Meek, U. S. Geol. Surv. Nebr., p. 203, pl. 10, fig. 18.
   Upper Coal Measures: Nebraska City, Nebraska.
   Coal Measures: Illinois.
- 1873. Nucula Beyrichi. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 589, pl. 26, fig. 9.

Coal Measures: Illinois.

1891. Nucula beyrichi. Keyes, Proc. Acad. Nat. Sci. Phil., p. 249. Lower Coal Measures: Des Moines, Iowa.

Nucula cylindricus. See Cardiomorpha missouriensis.

## Nucula hians Hall.

1860. Nucula hians. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 110. Goniatite L. S.: Rockford, Indiana.

### Nucula houghtoni Stevens.

- 1858. Nucula Houghtoni. Stevens, Am. Jour. Sci. (2), vol. 25, p. 262. Carboniferous: Battle Creek, Michigan.
- 1862. Nucula iowensis. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 298.

Chemung Group: Burlington, Iowa.

- 1862. Nucula Iowensis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 418. Marshal Group: Battle Creek and Wyoming, Michigan.
- 1884. Nucula Iowensis. Hall, Rep. N. Y. State Geol. for 1881, pl. 7, figs. 8, 9. Waverly Group: Granville, Ohio.
- 1885. Nucula Honghtoni. Hall, Pal. N. Y., vol. 5, pt. 1, p. 323, pl. 45, figs. 29-31. Waverly S. S.: Newark and Richfield, Ohio; Battle Creek and near Hillsdale, Michigan.
- 1888. Ctenodonta (Nucula) iovensis. Herrick, Bull. Den. Univ., vol. 3, p. 78, pl. 1, figs. 14-17.
  Waverly Group: Licking County, Ohio.
- 1888. Ctenodonta (Nucula) houghtoni? Herrick, Bull. Den. Univ., vol. 3, p. 78, pl. 5, fig. 17.
- Waverly Group: Licking County, Ohio.

  1888. Nucula (Ctenodonta) houghtoni. Herrick, Bull. Den. Univ., vol. 4, p. 44, pl. 4, fig. 3; pl. 10, fig. 4.

  Waverly Group: Cuyahoga Falls, Ohio.
- 1889. Ctenodonta houghtoni? Herrick, Am. Geol., vol. 3, pl. 2, fig. 3.
- 1895. Ctenodonta houghtoni. Herrick, Geol. Surv. Ohio, vol. 7, pl. 16, fig. 3. Cuyahoga Shale: Ohio.
- 1895. Ctenodonta houghtoni. Herrick, Geol. Surv. Obio, vol. 7, pl. 21, fig. 17. Kinderhook: Ohio.
- 1895. Nucula houghtoni (?). Herrick, Geol. Surv. Ohio, vol. 7, pl. 23, fig. 6. (Cuyahoga Shale): Cuyahoga Falls, Ohio.

Nucula hubbardi. See Palæoneilo sulcatina.

Nucula hubbardi var. prolata. See Palæoneilo sulcatina.

## Nucula illinoisensis Worthen.

- 1884. Nucula illinoiensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 15. Oolitic beds of St. Louis L. S.: Monroe County, Illinois.
- 1890. Nuoula illinoiensis. Worthen, Geol. Surv. Ill., vol. 8, p. 128, pl. 19, figs. 4, 4a. St. Louis L. S. (colite): Monroe County, Illinois.

#### Nucula insularis Walcott.

1884. Nucula insularis. Walcott, Pal. Eureka Dist., p. 241, pl. 20, fig. 14.

Lower Carboniferous: Eureka District, Nevada.

Nucula iowensis. See Nucula houghtoni.

Nucula kazanensis. See Nuculana bellistriata.

## Nucula levatiformis Walcott.

1884. Nucula levatiforme. Pal. Euroka Dist., p. 241, pl. 22, figs. 1, 1a. Lower Carboniferous: Euroka District, Nevada.

## Nucula microdonta Winchell.

1863. Nucula microdonta. Winchell, Proc. Acad. Nat. Sci., Phil., p. 16.
Yellow S. S. and base of Burlington L. S.: Burlington, Iowa.

Nucula nasuta. See Nuculana nasuta.

## Nucula obsoleta McChesney.

1861. Nucula obsoleta. McChesney, Desc. New Pal. Foss., p. 89. Coal Measures: Carnahan's Mine, Mercer County, Illinois.

## Nucula parva McChesney.

1860. Nucula parra. McChesney, Desc. New Pal. Foss., p. 54.

Coal Measures: Danville, Illinois.

1865. Nucula parva. McChesney, Ill., New Spec. Foss., pl. 2, figs. 8a-c.

1868. Nucula parra. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 39, pl. 2, figs. 8a-c.

Coal Measures: Danville, Illinois,

1873. Nucula parra. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 589, pl. 26, fig. 8.
Coal Measures: Danville, Illinois.

1888. Nucula parra. Keyes, Proc. Acad. Nat. Sci. Phil., p. 233. Lower Coal Measures: Des Moines, Iowa.

1894. Nuoula parra. Keyes, Mo. Geol. Surv., vol. 5, p. 121. Upper Coal Measures: Kansas City, Missouri.

1897. Nucula parva. Smith, Proc. Am. Phil. Soc., vol. 35, p. 35.

Lower Coal Measures: Conway County, Arkansas.
Upper Coal Measures: Crawford County, Arkansas.

## Nucula perumbonata White.

1879. Nucula perumbonata. White, Bull. U. S. Geol. and Geog. Surv. Terr., vol. 5, p. 217

Carboniferous: Wild Band Pockets, northern Arizona, 15 miles south of Pipe Spring.

1880. Nucula perumbonata. White, Cont. to Inv. Pal., No. 6, p. 136, pl. 34, figs.7a, b. Upper Carboniferous: Wild Band Pockets, northern Arizona. 15 miles south from Pipe 3pring.

## Nucula rectangula McChesney.

1860. Nucula rectangula. McChesney, Desc. New Pal. Foss., p. 74.

Hamilton Group: Near Batesville, Arkansas.

1865. Nucula rectangula. McChesney, Ill. New Spec. Foss., pl. 7, figs. 5a-c.

1868. Nucula? rectangula. McChesney. Trans. Chicago Acad. Soi., vol. 1, p. 40, pl. 7, figs. 5a-c.

Dark Colored Hamilton Shales: Batesville, Arkansas.

#### Nucula sectoralis Winchell.

1862. Nucula sectoralis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 418.
Marshall Group: Battle Creek and Pointe Aux Barques, Michigan.

## Nucula shumardana Hall.

1856. Nucula Shumardana. Hall, Trans. Albany Inst., vol. 4, p. 16.
St. Louis L. S.: Spergen Hill and Bloomington, Indiana.

1882. Nucula Shumardana. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 57, pl. 7, figs. 2-6.

St. Louis Group: Spergen Hill and Bloomington, Indiana.

1883. Nucula shumardana. Hall, 12th Rep. Geol. Surv. Ind., p. 343, pl. 30, figs. 2-6. St. Louis Group: Spergen Hill, Lanesville and Bloomington, Indiana.

## Nucula speciosa Munster.

1858. Nucula speciosa (!) Swallow, Trans. St. Louis Acad. Sci., vol., 1, p. 190. Permian f: Kansas.

#### Nucula stella Winchell.

1862. Nucula Stella. Winchell, Proc. Acad. Nat. Sci. Phil., p. 419. Marshall Group: Michigan.

1865. Ctenodonta stella. Winchell, Proc. Acad. Nat. Sci. Phil., p. 129. Marshall Group: Napoleon Cut, Jackson County, Michigan.

1888. Ctenodonta (Nucula) stella. Herrick, Bull. Den. Univ., vol. 3, p. 78, pl. 9, fig. 14.

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Waverly Group: Licking County, Ohio.

# Nucula subscitula. See Yoldia subscitula.

### Nucula ventricosa Hall.

- 1858. Nucula ventricosa. Hall, Geol. Iowa, vol. 1, pt. 2, p. 716, pl. 24, figs. 4, 5a, b. Coal Measures.
- 1872. Nucula ventricosa. Meek, U. S. Geol. Surv. Nebr., p. 204, pl. 10, figs. 17a-c. Upper Coal Measures: Nebraska City and Rock Bluff, Nebraska. Lower Coal Measures: West Virginia. Coal Measures: Illinois.
- 1882. Nucula rentricosa. White, 11th Rep. Geol. Surv. Ind., p. 371, pl. 42, figs. 9, 10.
  Coal Measures: Sullivan County, Indiana.
- 1884. Nucula ventricosa. White, 13th Rep. Geol. Surv. Ind., p. 146, pl. 27, figs. 9, 10.
  - Coal Measures: Sullivan County, Indiana.
- 1888. Nucula ventricosa. Keyes, Proc. Acad. Nat. Sci. Phil., p. 233. Lower Coal Measures: Des Moines, Iowa.
- 1894. Nucula rentricosa. Keyes, Mo. Geol. Surv., vol. 5, p. 121, pl. 45, figs. 3a, b. Lower Coal Measures: Clinton, Missouri. Upper Coal Measures: Kansas City and Gentry, Missouri.
- 1897. Nucula ventricosa. Smith, Proc. Am. Phil. Soc., vol. 35, p. 35.
  Lower Coal Measures: Conway County, Arkansas.

# Nucula (species undetermined).

- 1858. Nucula, species not determined. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 190.
  Upper Permian: Kansas.
- 1868. Nucula? Rogers, Geol. Rep. Penn., vol. 2, p. 833, fig. 690.
- 1888. Nucula sp. Herrick, Pull. Den. Univ., vol. 3, pl. 3, figs. 15, 16. Waverly Group: Licking County, Ohio.
- 1888. Nucula spf Herrick, Bull. Den. Univ., vol. 3, pl. 4, fig. 7. Waverly Group: Licking County, Ohio.
- 1888. Ctenodonta sp. Herrick, Bull. Den. Univ., vol. 3, pl. 8, fig. 16. Waverly Group: Licking County, Ohio.
- 1888. Nucula? Herrick, Bull. Den. Univ., vol. 3, pl. 9, fig. 16. Waverly Group: Licking County, Ohio.
- 1891. Nuoula sp. Herrick, Bull. Geol. Soc. Am., vol. 2, pl. 1, fig. 5. Cuyahoga Shale: Ohio.

# NUCULANA Link, 1807.

### Nuculana arata Hall.

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1852. Nucula arata. Hall, Stansb. Exped. Gt. Salt Lake, p. 413, pl. 2, figs. 5a, b. Carboniferous: Missouri River, below Weston.

#### Nuculana bellistriata Stevens.

- 1858. Leda bellistriata. Stevens, Am. Jour. Sci. (2), vol. 25, p. 261. Coal Measures: Danville, Illinois; Summit, Ohio.
- 1858. Nucula (Leda) Kazanensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 190. (Not N. kazenensis Verneuil, 1845.)
  Upper and Lower Permian: Valley of Cottonwood and near Smoky Hill Fork, Kansas.
- 1858. Leda bellistriata. Hall, Geol. Iowa, vol. 1, pt. 2, p. 717, pl. 29, figs. 6a-d. Lower Coal Measures: Illinois.
- 1862. Leda bellistriata. Winchell, Proc. Acad. Nat. Sci. Phil., p. 419. Marshall Group: Moscow, Michigan.
- 1865. Leda bellistriata. Winohell, Proc. Acad. Nat. Sci. Phil., p. 128. Marshall Group: Hillsdale, Michigan.

#### **Muculana bellistriata** Stevens—Continued.

- 1869. Leda bellistriata? Winchell, Safford's Geol. of Tenu., p. 444. Shales just above Black Shale: Hickman and Maury counties, Tennessee.
- 1870. Leda bellistriata? Winchell, Proc. Am. Phil. Soc., vol. 11, p. 256. Waverly Group: Tennessee.
- 1884. Nuculana bellistriata. White, 13th Rep. Geol. Surv. Ind., p. 146, pl. 31. figs. 8, 9.
  - Coal Measures: Vermilion, Sullivan, Vanderburg, and Warrick counties.
- 1887. Nuculana bellistriata. Herrick, Bull, Den. Univ., vol. 2, p. 40, pl. 4, fig. 26. Coal Measures: Flint Ridge, Ohio.
- 1888. Nuculana bellistriata. Keyes, Proc. Acad. Nat. Sci. Phil., p. 232. Lower Coal Measures: Des Moines, Iowa.
- 1894. Nuculana bellistriata. Keyes, Mo. Geol. Surv., vol. 5, p. 122, pl. 45, figs. 4a, b. Upper Coal Measures: Gentry and Kansas City, Missouri.
- 1897. Nuculana aff. bellistriata. Smith, Proc. Am. Phil. Soc., vol. 35, p. 35 Upper Coal Measures: Scott County, Arkansas.

# Nuculana bellistriata var. attenuata Meek.

- 1866. Nucula Kazanensis. Geinitz, Carb. und Dyas in Nebr., p. 20, tab. 1, figs. 33, 34. (Not N. kazanensis de Vern. 1845.) Nebraska City, Nebraska.
- 1872. Nuculana bellistriata var. attenuata. Moek, U. S. Geol. Surv. Nebr., p. 206, pl. 10, figs. 11a, b.
  - Upper Coal Measures: Nebraska City, Nebraska; Leavenworth, Kansas; Iowa; Illinois.

Lower Coal Measures: West Virginia.

#### Nuculana curta Meek and Worthen.

- 1861. Leda curta. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 144. St. Louis L. S.: Waterloo, Monroe County, Illinois.
- 1866. Nuculana f curta. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 283, pl. 20.

St. Louis Group: Waterloo, Monroe County, Illinois.

### Nuculana dens-mamillata Stevens.

1858. Leda dens-mamillata. Stevens, Am. Jour. Sci. (2), vol. 25, p. 262. Carboniferous: Battle Creek, Michigan.

### Muculana diversa Hall.

- 1883. Leda (Nuculana) diversa. Hall, Pal. N. Y., vol. 5, pt. 1, Plates and Explanations, pl. 47, figs, 31-37.
- 1885. Leda diversa. Hall, Pal. N. Y., vol. 5, pt. 1, p. 329, pl. 47, figs. 31-37. Hamilton Group: Schoharie County and Onondaga County, New York.
- 1888. Nuculana diversa? Herrick, Bull. Den. Univ., vol. 4, pl. 4, fig. 22. Waverly Group: Peninsula, Ohio.
- 1888. Nuculana diversa. Herrick, Bull. Den. Univ., vol. 4, pl. 9, fig. 13. Bedford Shale: Central College, Ohio.
- 1889. Nuculana diversa? Herrick, Am. Geol., vol. 3, pl. 2, fig. 22. 1889. Leda diversa var. Herrick, Am. Geol., vol. 3, pl. 4, fig. 13. Bedford Shale: Ohio.
- 1895. Nuculana diversa? Herrick, Geol. Surv. Ohio, vol. 7, pl. 16, fig. 22. Waverly Group: Peninsula, Ohio.
- 1895. Nuculana dirersa. Herrick, Geol. Surv. Ohio, vol. 7, pl. 20, fig. 13. Shale above Berea Grit: Ohio.

#### Nuculana nasuta Hall.

1856. Nuoula nasuta. Hall, Trans. Albany Inst., vol. 4, p. 17. St. Louis L. S.: Spergen Hill, Indiana.

#### Muculana pasuta Hall—Continued.

1882. Nuculana wasuta. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 57, pl. 7,

St. Louis Group: Spergen Hill, Indiana.

1883. Leda nasuta. Hall, 12th Rep. Geol. Surv. Ind., p. 344, pl. 30, figs. 7-9. St. Louis Group: Spergen Hill and Lanesville. Indiana.

# Nuculana nuculæformis Stevens.

1858. Leda nuculæformis. Stevens, Am. Jour. Sci. (2), vol. 25, p. 262. Carboniferous: Battle Creek, Michigan.

1888. Nuculana nuculæformis. Herrick, Bull. Den. Univ., vol. 4, p. 45, pl. 4, fig. 23. Waverly Group: Newark, Ohio.

1889. Nuculana nucullæformis? Herrick, Am. Geol., vol. 3, pl. 2, fig. 23.

1895. Nuculana nuculæformis? Herrick, Geol. Surv. Ohio, vol. 7, pl. 16, fig. 23. Burlington: Newark, Ohio.

#### Nuculana obesa White.

1879. Nuculana obesa. White, Bull. U. S. Geol. and Geog. Surv. Terr., vol. 5, p. 216. Carboniferous: Wild Band Pockets, northern Arizona, 15 miles south of Pipe Spring.

1880. Nuculana obesa. White, Cont. to Inv. Pal., No. 6, p. 136, pl. 34, figs. 2a-c. Upper Carboniferous: Wild Band Pockets, northern Arizona, 15 miles south from Pipe Spring.

### Muculana pandoriformis Stevens.

1858. Leda pandoræformis. Stevens, Am. Jour. Sci. (2), vol. 25, p. 262.

Carboniferous: Battle Creek, Michigan.

1884. Leda Ohioeneis. Hall, Rep. N. Y. State Geol. for 1881, pl. 7, fig. 3. Waverly S. S.: Waverly, Ohio.

1885. Leda pandoriformis. Hall, Pal. N. Y., vol. 5, pt. 1, p. 332, pl. 47, figs. 49, 50. Waverly S. S.: Newark, Ohio; Battle Creek, Michigan.

### Nuculana saccata Winchell.

1863. Leda saccata. Winchell, Proc. Acad. Nat. Sci. Phil., p. 16. Yellow S. S.: Burlington, Iowa.

1888. Nuculana (Leda) saccata? Herrick, Bull. Den. Univ., vol. 3, p. 80, pl. 9, fig. 12.

Waverly Group: Licking County, Ohio.

1888. Nuculana saccata ! Herrick, Bull. Den. Univ., vol. 4, pl. 4, fig. 16. Waverly Group: Ohio.

1889. Nuculana saccata? Herrick, Am. Geol., vol. 3, pl. 2, tig. 16.

1895. Nuculana sacca/a. Herrick, Gool. Surv. Ohio, vol. 7, pl. 16, fig. 16. Waverly Shale, below Conglomerate I: Ohio.

# Nuculana similis Herrick.

1888. Nuculana (Leda) simitis. Herrick, Bull. Den. Univ., vol. 3, p. 79, pl. 4, fig. 13, 15.

Waverly Group: Licking County, Ohio.

1889. Nuculana similis. Herrick, Am. Geol., vol. 3, pl. 2, tig. 13.

1895. Nuculana similis. Herrick, Gool: Surv. Ohio, vol. 7, pl. 16, fig. 13. Waverly Group, below Conglomerate I: Ohio.

#### Nuculana spatulata Herrick.

1888. Nuculana (Leda) spatulata. Herrick, Bull. Den. Univ., vol. 3, p. 79, pl. 9, fig. 11; pl. 7, fig. 35. Waverly Group: Licking County, Ohio.

#### Nuculana vaseyana McCheeney.

1860. Nuculites raseyana. McChesney, Desc. New Pal. Foss., p. 73. Hamilton Group: Batesville, Arkansas.

# Muculana vaseyana McChesney—Continued.

1865. Nuculites vaseyana. McChesney, Ill. New Spec. Foss., pl. 7, figs. 4a-d.

1868. Nuculana Vaseyana. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 37, pl. 7, figs. 4a-d.

Hamilton Group: Batesville, Arkansas.

# Nuculana (species undetermined).

1873. Nuculana (sp. undet.). Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 26, fig. 10.

Coal Measures.

1874. Nuculana (sp. undet.). Meek, Am. Jour. Sci. (3), vol. 7, p. 489.

1888. Nuculana sp. Herrick, Bull. Den. Univ., vol. 4, p. 45, pl. 4, fig. 11. Waverly Group: Gaun, Ohio.

1888. Nuculana sp. Herrick, Bull. Den. Univ., vol. 4, p. 45, pl. 4, fig. 12. Waverly Group: Granville, Ohio.

1889. Nuculana sp. Herrick, Am. Geol., vol. 3, pl. 2, figs. 11, 12.

1895. Nuculana sp. Herrick, Geol. Surv. Ohio, vol. 7, pl. 16, figs. 11, 12. Kinderhook: Gann and Granville, Ohio.

# NUCULITES Conrad, 1841.

#### Nuculites concentrious Conrad.

\*1842. Nuculites concentricus. Conrad, Jour. Acad. Nat. Sci. Phil, (1), vol. 8, p. 248. Coal Measures.

#### Muculites mactroides Conrad.

1842. Nuculites mactroides. Conrad, Jour. Acad. Nat. Sci. Phil. (1), vol. 8, p. 249, pl. 15, fig. 6.

Carboniferous: Hillsdale County, Michigan.

Nuculites sulcatina. See Palæoneilo sulcatina.

Nuculites vaseyana. See Nuculana vaseyana.

# NULLIPORA Lamark, 1801.

# Nullipora? obtexta White.

1862. Nullipora? obtexta. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 33. Chemung Group: Burlington. Iowa.

#### (ŒHLERTELLA Hall, 1892.)

# Œhlertella pleurites. See Lingulodiscus pleurites.

# OLIGOPORUS Meek and Worthen, 1860.

# Oligoporus bellulus Miller and Gurley.

1894. Oligoporus bellulus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 7, pl. 1, fig. 3.

Keokuk Group: Boonville, Missouri.

# Oligoporus blairi Miller and Gurley.

1894. Oligoporus blairi. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 6, pl. 1, figs. 2, 6; pl. 2, fig. 7.
Keokuk Group: Boonville, Missouri.

# Oligoporus coreyi Meek and Worthen.

1870. Oligoporus Coreyi. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 34. Keokuk Group: Crawfordsville, Indiana.

# Oligoporus coreyi Meek and Worthen-Continued.

- 1895. Oligoporus coreyi. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 183. Keokuk Shales: Crawfordsville, Indiana.
- 1896. Oligoporus coreyi. Jackson, Bull. Geol. Soc. Am., vol. 7, p. 186, pl. 6, figs. 25-29.

Subcarboniferous (Keokuk Group?): Indiana.

# Oligoporus danse Meek and Worthen.

- 1860. Melonites Danc. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 397. Keokuk L. S.: Jersey County, near Warsaw, Illinois.
- 1860. Oligoporus Dana. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 474.
- 1866. Oligoporus Dana. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 249, pl. 17, fig. 8.

Keokuk L. S.: Jersey County, Illinois; Warsaw, Illinois; Fenton, Missouri.

- 1894. Oligoporus danæ. Keyes, Mo. Geol. Surv., vol. 4, p. 126, pl. 17, figs. 2a, b. Keokuk L. S.: Felton and Curryville, Missouri; Keokuk, Iowa.
- 1895. Oligoporus danw. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 182, pl. 20, figs. 2a, b.

Keokuk L. S.: Felton, St. Louis County, and Curryville, Pike County, Missouri; Keokuk, Iowa; Jersey County, Illinois.

1896. Oligoporus danæ. Jackson, Bull. Geol. Soc. Am., vol. 7, p. 193, pl. 6, figs. 30-34.

Keokuk Group: Keokuk, Iowa; Warsaw and Alton, Illinois.

# Oligoporus missouriensis Jackson.

1896. Oligoporus missourioneis. Jackson, Bull. Geol. Soc. Am., vol. 7, p. 184, pl. 9, figs. 50-52.
Augusta L. S. (†): Webb City, Missouri.

### Oligoporus mutatus Keyes.

- 1894. Oligoporus mutatus. Keyes, Mo. Geol. Surv., vol. 4, p. 126, pl. 15, figs. 4a, b. -Keokuk L. S.: Keokuk, Iowa.
- 1895. Oligoporus mutatus. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 183, pl. 18, figs. 4a, b.

Keokuk L. S.: Keokuk, Iowa.

# Oligoporus nobilis Meek and Worthen.

- 1868. Oligoporus nobilis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 358. Burlington L. S.: Calhoun County, Illinois.
- 1873. Oligoporus nobilis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 476, pl. 11, fig. 3.

Burlington L. S.: Calhoun County, Illinois.

- 1895. Oligoporus nobilis. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 182. Burlington L. S.: Calhoun County, Illinois.
- 1896. Oligoporus nobilis. Jackson, Bull. Geol. Soc. Am., vol. 7, p. 198, pl. 6, fig. 35. Keokuk Group: Keokuk, Iowa, or Warsaw, Illinois.

# Oligoporus parvus Hambach.

- 1884. Oligoporus parvus. Hambach, Trans. St. Louis Acad. Sci., vol. 4, p. 550, pl. C., fig. 3.
  - St. Louis L. S.: St. Louis, Missouri.
- 1894. Oligoporus parvus. Keyes, Mo. Geol. Surv., vol. 4, p. 127.

St. Louis L. S.: St. Louis, Missouri.

1895. Oligoporus parrus. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 183. St. Louis L. S.: St. Louis, Missouri.

# Oligoporus sulcatus Miller and Gurley.

- 1894. Oligoporus sulcatus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 8, pl. 1, figs. 4, 5.
  - St. Louis Group: Hardin County, Kentucky.

WELLER.

# (OLLACRINUS Cumberland, 1826.)

Ollacrinus papillatus. See Gilbertsocrinus tuberculosus. Ollacrinus tuberculosus. See Gilbertsocrinus tuberculosus. Ollacrinus typus. See Gilbertsocrinus typus.

# OMPHALOTROCHUS Meek, 1864.

### Omphalotrochus springvalensis White.

1876. Euomphalus Springvalensis. White, Proc. Acad. Nat. Sci. Phil., p. 32. Kinderhook Group: Springdale, Humboldt County, Iowa.

1880. Enomphalus springcalensis. White, Cont. to Inv. Pal., No. 8, p. 167, pl. 41, figs. 1a, b. Kinderhook Group: Springdale, Humboldt County, Iowa.

1890. Straparollus springvalensis. Keyes, Am. Geol., vol. 5, p. 195.

Kinderhook Group: Humboldt County, Iowa.

1894. Omphalotrochus springvalensis. Keyes, Mo. Geol. Surv., vol. 5, p. 162, pl. 51, fig. 7.

Lower Burlington L. S.: Louisiana, Missouri.

# Omphalotrochus whitneyi Meek.

1864. Euomphalus Whitneyi. Meek, Pal. Cal., vol. 1, p. 15, pl. 2, figs. 8, 8a. (Name Omphalotrocus suggested.)

Carboniferous: Bass's Ranch, Shasta County, California.

# ONCODOCERAS Hyatt, 1893.

# Oncodoceras rockfordense Meek and Worthen.

1866. Nautilus (Cryptoceras) rockfordensis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 275.

Goniatite L. S.: Rockford, Indiana.

1868. Gyroceras? Rockfordensis. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 459, pl. 14, figs. 2q, b. Goniatite L. S.: Rockford, Indiana.

1891. Solenochilus rockfordense. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 89, pl. 16, fig. 3, pl. 17, fig. 1. Waverly or Knobstone Group: Rockford, Indiana.

1892. Solenochilus rockfordense. Miller, 17th Rep. Geol. Surv. Ind., p. 699, pl. 16, fig 3; pl. 17, fig. 1.

Waverly or Knobstone Group: Rockford, Indiana.

1893. Oncodoceras (Solenocheilus) rockfordiense. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 456.

# ONYCHASTER Meek and Worthen, 1868.

# Onychaster asper Miller.

1891. Onychaster asper. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 74, pl. 13, figs. 3-5.

Keokuk Group: Boonville, Missouri.

1892. Onychaster asper. Miller, 17th Rep. Geol. Surv. Ind., p. 684, pl. 13, figs. 3-5. Keokuk Group: Boonville, Missouri.

1894. Onychaster asper. Keyes, Mo. Geol. Surv., vol. 4, p. 131. Keokuk L. S.: Boonville, Missouri.

Bull. 153-25

### Onychaster barrisi Hall.

\*1861. Protaster barrisi. Hall, Desc. New Spec. Criu., p. 18. Burlington L. S.

1873. Onychaster Barrisi. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 476, pl. 10, fig. 1.

Burlington L. S.: Burlington, Iowa.

# Onychaster confragosus Miller.

1891. Onychaster confragosus. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 74, pl. 12, figs. 6, 7.

Keokuk Group: Boonville, Missouri.

1892. Onychaster confragosus. Miller, 17th Rep. Geol. Surv. Ind., p. 684, pl. 12, figs. 6, 7.

Keokuk Group: Boonville, Missouri.

#### Onvchaster demissus Miller.

1891. Onychaster demissus. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 75, pl. 12, figs. 8-10.

Keokuk Group: Boonville, Missouri.

1892. Onychaster demissus. Miller, 17th Rep. Geol. Surv. Ind., p. 685, pl. 12, figs. 8-10.

Keokuk Group: Boonville, Missouri.

# Onychaster flexilis Meek and Worthen.

1868. Onychaster flexilis. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 526, figs. A-D.

Keokuk Group: Crawfordsville, Indiana.

1869. Onychaster flexilis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 83.

1873. Onychaster Flexilis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 510, pl. 16, fig. 3.

Keokuk Group.

# ONYCHOCRINUS Lyon and Casseday, 1859.

# Onychocrinus asteriæformis Hall.

1861. Forbesiocrinus asteriæformis. Hall, Desc. New Spec. Crin., p. 9. Burlington, L. S.

1861. Forbestocrinus asteriæformis. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 320. Burlington L. S.: Burlington, Iowa.

1872. Forbesiocrinus asteriæformis. Hall, Photo. Plates of Crinoids, pl. 6 figs. 10, 11.

#### Onychocrinus cantonensis Miller and Gurley.

1890. Onychocrinus cantonensis. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 359, pl. 7, fig. 9.

Keokuk Group: Near Canton, Indiana.

# Onychocrinus distensus Worthen.

1882. Onychoorinus distensus. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 31.

Chester L. S.: Monroe County, Illinois.

1883. Onychocrinus distensus. Worthen, Geol. Surv. Ill., vol. 7, p. 307, pl. 29, fig. 5. Chester L. S.: Monroe County, Illinois.

#### Onvehorrinus diversus Meek and Worthen.

1866. Onychocrinus diversus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 256.

Upper Burlington Group: Burlington, Iowa.

1868. Onychocrinus diversus. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 492, pl. 17, figs. 5a, b.

Burlington Group: Burlington, Iowa.

# Onychocrinus exculptus Lyon and Casseday.

1860. Onychocrinus exculptus. Lyon and Casseday, Am. Jour. Sci. (2), vol. 29, p.78. Subcarboniferous: Clear Creek, Hardin County, Kentucky. Montgomery County, Indiana.

1860. Forbesiccrinus? Norwoodi. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 389.

Keokuk L. S.: Near Nauvoo, Illinois.

1866. Onychocrinus Norwoodi. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 245, pl. 17, fig. 3.

Keokuk L. S.: River bluff, near south line of Monroe County, Illinois.

1873. Onychocrinus exculptus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 498, pl. 14, fig. 4.

Keokuk Group: Crawfordsville, Indiana.

1882. Onychocrinus exculptus. White, 11th Rep. Gool. Surv. Ind., p. 365, pl. 40, fig. 1.

Keokuk Group: Crawfordsville, Indiana.

# Onychocrinus magnus Worthen.

1875. Onychocrinus magnus. Worthen, Geol. Surv. Ill., vol. 6, p. 520, pl. 31, fig. 5. St. Louis Group: Monroe County, Illinois.

# Onychocrinus monroensis Meek and Worthen.

 Forbesiocrinus Monroensis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 130.

Keokuk L. S.: River bluff, near south line of Monroe County, Illinois.

1866. Onychocrinus monroensis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 244, pl. 17; fig. 7.

Keokuk Group: River bluff, near south line of Monroe County, Illinois.

1894. Onychocrinus monroensis. Keyes, Mo. Geol. Surv., vol. 4, p. 224, pl. 30, fig. 2. St. Louis L. S.: St. Louis, Missouri.

#### Onychocrinus norwoodi. See Onychocrinus exculptus.

# Onychocrinus parvus Miller and Gurley.

1894. Onychocrinus parvus Miller and Gurley, Bull. No. 3, Ill. State Mus. Nut. Hist., p. 52, pl. 4, fig. 5.

Kaskaskia Group: Shoals, Martin County, Indiana.

# Onychocrinus pulaskiensis Miller and Gurley.

1895. Onychocrinus pulaskiensis. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 40, pl. 4, figs. 1, 2.

Kaskaskia Group: Pulaski County, Kentucky.

#### Onychocrinus ramulosus Lyon and Casseday.

1859. Forbesiocrinus ramulosus. Lyon and Casseday, Am. Jour. Sci. (2), vol 28, p. 237.

Subcarboniferous L. S.: Hardin County, Kentucky; Indiana.

1882. Onychocrinus ramulosus. White, 11th Rep. Geol. Surv. Ind., p. 366, pl. 39, figs. 2, 3.

Keokuk Group: Crawfordsville, Indiana.

# Onychocrinus ulrichi Miller and Gurley.

1890. Onychocrinus ulrichi. Miller and Gurley, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 17, pl. 3, figs. 2, 3.

Keokuk Group: Crawfordsville, Ind.

1890. Onychocrinus ulrichi. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 339, pl. 3, figs. 2, 3.

Keokuk Group: Crawfordsville, Indiana.

Onychocrinus whitfieldi. See Taxocrinus whitfieldi.

# ORACARDIA Herrick, 1888.

# Oracardia cornuta Herrick.

- 1888. Oracardia cornuta. Herrick, Bull. Den. Univ., vol. 4, p. 42, pl. 4, fig. 6. Waverly Group: Ohio.
- 1889. Oracardia cornuta. Herrick, Am. Geol., vol. 3, pl. 2, fig. 6.
- 1895. Oracaraia cornuta. Herrick, Geol. Surv. Ohio, vol. 7, pl. 16, figs. 6, 8-10. Cuyahoga Shale: Ohio.

Kinderhook Freestone: Granville, Ohio.

#### Oracardia ornata Herrick.

- 1888. Oracardia ornata. Herrick, Bull. Den. Univ., vol. 4, p. 41, pl. 4, figs. 8-10. Waverly Group: Granville, Ohio.
- 1889. Oracardia ornata. Herrick, Am. Geol. vol. 3, pl. 2, figs. 8-10.

# ORBICULOIDEA D'Orbiguy, 1847.

#### Orbiculoidea batesvillensis Weller.

1897. Orbiculoidea batesvillensis. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 255, pl. 18, figs. 4, 5.

Batesville S. S.: Batesville, Arkansas.

# Orbiculoidea capax White.

- 1862. Discina capax. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 30. Chemung Group: Burlington, Iowa.
- 1865. Discina capax. Winchell, Proc. Acad. Nat. Sci. Phil., p. 112. Marshall Group: Girard, Trumbull County, Ohio.
- 1870. Discina Capax? Winchell, Proc. Am. Phil. Soc., vol. 11, p. 249. Waverly Group: Rockville, Ohio.

# Orbiculoidea capuliformis McChesney.

- 1860. Discina capuliforma. McChesney, Desc. New Pal. Foss., p. 72.
  Coal Measures: Springfield, Illinois; 12 miles northwest of Richmond,
  Missouri.
- 1868. Discina capuliformis. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 23, pl. 2, fig. 20.

Coal Measures: Springfield, Illinois; 12 miles northwest of Richmond, Missouri.

#### Orbiculoidea convexa Shumard.

- 1858. Discina convexa. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 221. Upper Coal Measures: Valley of Verdigris River, Kansas.
- 1884. Discina conrexa. White, 13th Rep. Geol. Surv. Ind., p. 121, pl. 25, fig. 9. Coal Measures: Vermilion County, Indiana.
- 1886. Discina convexa. Heilprin, 2d Geol. Surv. Penn., Ann. Rep. for 1885, p. 452, fig. 18.

Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.

1886. Discina convexa. Heilprin, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2- pt. 2, p. 267, fig. 18.

Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.

- 1887. Discina convera. Herrick, Bull. Den. Univ., vol. 2, p. 144, pl. 3, fig. 19. Coal Measures: Flint Ridge, Ohio.
- 1894. Discina conrera. Keyes, Mo. Geol. Surv., vol. 5, p. 40, pl. 35, fig. 7. Upper Coal Measures: Near Richmond, Missouri.

# Orbiculoidea gallaheri Winchell.

- 1865. Discina Gallaheri. Winchell, Proc. Acad. Nat. Sci. Phil., p. 112.
  Marshall Group: Hillsdale, Michigan; Gerard and Wethersfield, Trumbull County, Ohio.
- 1870. Discina Gallaheri. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 249.

  Waverly Group: Granville, Ohio; near Shafer's, Pennsylvania.

#### Orbiculoidea herzeri Hall and Clarke.

- 1892. Orbiculoidea Herzeri. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, p. 126 (footnote), p. 178, pl. 4E, fig. 19; pl. 4F, figs. 9-13, 30.
  Cuvahoga Shale: Berea, Ohio.
- 1892. Orbiculoidea pulchra. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 5, figs. 11, 17.
  Cuyahoga Shale: Berea, Ohio.
- 1892. Orbiculoidea pulchra. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 4E, fig. 19; pl. 4F, figs. 8-13, 30, 32.
  Cuyahoga Shale: Berea, Baconberg, and Newark, Ohio.
- 1892. Orbiculoidea compare O. pulchra. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 4F, figs. 14-16.
- pl. 4F, figs. 14-16. Waverly Group: Meadville, Pennsylvania. 1897. Orbiculoidea Herzeri. Hall, 14th Ann. Rep. N. Y. State Geol., p. 333, pl. 2,

figs. 14-20. Cuyahoga Shale: Berea, Baconsburg, etc., Ohio.

#### Orbiculoidea illinoisensis Miller and Gurley.

1894. Discina illinoisensis. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 70, pl. 7, figs. 2-5.

Coal Measures: Knox County and Peoria County, Illinois.

#### Orbiculoidea keokuk Gurley.

1884. Discina Keokuk. Gurley, New Carb. Foss., Bull. No. 2, p. 6. Keokuk Group: Crawfordsville, Indiana.

#### Orbiculoidea magnifica Herrick.

1891. Discina magnifica. Herrick, Bull. Geol. Soc. Am., vol. 2, p. 46, pl. 1, fig. 17. Waverly Group: Hemlock Falls, Ashland County, Ohio.

### Orbiculoidea manhattanensis Meek and Hayden.

- 1859. Discina Manhattanensis. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 25. Upper Coal Measures: Kansas River, opposite Manhattan, Kansas.
- 1892. Orbiculoidea Manhattanensis. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 5, fig. 12.
  Coal Measures: Riley County, Kansas.
- 1892. Orbiculoidea Manhattanensis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 4E, fig. 20.

Coal Measures: Riley County, Kansas.

### Orbiculoidea missouriensis Shumard.

- 1858. Discina Missouriensis. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 221-Middle Coal Measures: Lexington and Charbonnier, Missouri.
- 1873. Discina mitida? Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 572, pl. 25, fig. 1.
  Coal Measures: Illinois.
- 1882. Discina Meckana. Whitfield, Ann. N. Y. Acad. Sci., vol. 2, p. 228. Coal Measures: Carbon Hill and Flint Ridge, Ohio; Illinois; Iowa.
- 1884. Discina nitida. White, 13th Rep. Geol. Surv. Ind., p. 121, pl. 25, fig. 10.
  Coal Measures: Indiana; Illinois; Iowa; Missouri; abundant at Cannelton and Horse Shoe of Little Vermilion.
- 1887. Discina Meckana. Herrick, Bull. Den. Univ., vol. 2, pl. 2, figs. 8, 9. Coal Measures: Flint Ridge, Ohio.
- 1887. Discina nitida. Herrick, Bull. Den. Univ., vol. 2, p. 145, pl. 2, figs. 8, 9. Coal Measures: Flint Ridge, Ohio.
- 1888. Discina nitida. Keyes, Proc. Acad. Nat. Sci. Phil., p. 226. Lower Coal Measures: Des Moines, Iowa.
- 1891. Discina Meekana. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 598, pl. 15, figs. 1-3, also p. 603.
  Coal Measures: Carbon Hill and Flint Ridge, Ohio.

#### Orbiculoidea missouriensis Shumard—Continued.

- 1892. Orbiculoidea mitida. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 5, fig. 16.
  - Lower Coal Measures; Springfield, Illinois.
- 1892. Orbiculoidea nitida. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1. pl. 4F, figs. 23-29.
  - Coal Measures: Springfield, Illinois: Grover, Missouri.
- 1894. Discina nitida. Keyes, Mo. Geol. Surv., vol. 5, p. 39, pl. 35, fig. 6.
  Coal Measures: Clinton, Lexington, and Richmond, Missouri.
- 1895. Discina Meekana. Whitfield, Geol. Surv. Ohio, vol. 7, p. 483, pl. 11, figs. 1-3, also p. 488.
  - Coal Measures: Carbon Hill, Hocking County, Ohio.

### Orbiculoidea munda Miller and Gurley.

1894. Discina munda. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 71, pl. 7, figs. 6, 7.

Upper Coal Measures: Kansas City, Missouri.

# Orbiculoidea newberryi. See Lingulodiscina newberryi.

# Orbiculoidea nitida Phillips.

1894. Discina mitida. Walcott, Pal. Eureka Dist., p. 213, pl. 7, figs. 4, 4a. Lower Carboniferous L. S.: White Pine Mining District, Nevada.

# Orbiculoidea patellaris Winchell.

1863. Discina patellaris. Winchell, Proc. Acad. Nat. Sci. Phil., p. 4. Yellow S. S.: Burlington, Iowa.

# Orbiculoidea pleurites. See Lingulodiscina pleurites.

Orbiculoidea pulchra. See Orbiculoidea hertzeri.

#### Orbiculoidea saffordi Winchell.

- 1869. Discina Saffordi. Winchell, Safford's Geol. of Tenn., p. 443.
  - Shales just above Black Shale: Hickman and Maury counties, Tennessee.

1870. Discina Saffordi. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 248.

Waverly Group: Hickman County, Tennessee.

### Orbiculoidea sampsoni Miller.

- 1891. Discina sampsoni, Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 80, pl. 13, figs. 10, 12.
  - Chouteau L. S.: Sedalia, Missouri.
- 1892. Discini sampsoni. Miller, 17th Rep. Geol. Surv. Ind., p. 690, pl. 13, figs. 10, 12.

Chouteau L. S.: Sedalia, Missouri.

# Orbiculoides subtrigonalis McChesney.

- 1865. Discina subtrigonalis. McChesney, Ill. New Spec. Foss.
  - Coal Measures: La Salle, Illinois.
- 1865. Discina trigonalis. McChesney, Ill. New Spec. Foss., pl. 2, figs. 19a, b.
- 1868. Discina subtrigonalis. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 24, pl. 2, figs. 19a, b.

Coal Measures: La Salle, Illinois.

#### Orbiculoidea tenuilineata Meek and Hayden.

1859. Discina tenuilineata. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 25. Upper Coal Measures: Cottonwood Creek, Kansas.

# Orbiculoidea utahensis Meek.

- 1877. Discina sp. undt. Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 99, pl. 10, fig. 3. Upper Carboniferous: Weber Canyon, Wasatch Range, Utah.
- 1877. Discina utakensis. Meek, U.S. Geol. Expl. 40 Par., vol. 4, p. 99. (Also see footnote, p. 9.)

#### Orbiculoidea varsoviensis Worthen.

- 1884. Discina rarsoviensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 23. Keokuk L. S.: Warsaw, Illinois.
- 1890. Discina varsoriensis. Worthen, Geol. Surv. Ill., vol. 8, p. 102, pl. 11, fig. 7. Keokuk L. S.: Warsaw. Illinois.

# Orbiculoidea (species undetermined).

- 1872. Orbiculoidea, sp. Meek, U. S. Geol. Surv. Nebr., p. 158, pl. 4, fig. 3. Upper Coal Measures: Three-fourths of a mile west of Nebraska City, Nebraska.
- 1876. Discina ——? —. White, Powell's Rep. Geol. Uinta Mts., p. 89. Lower Aubrev Group: Beehive Point, near Horseshoe Canvon, Utah.
- 1876. Discina ? . White, Powell's Rep. Geol. Uinta Mts., p. 91. Upper Aubrey Group: Beehive Point, near Horseshoe Canyon, Utah.
- 1887. Orbiculoidea? sp. Herrick, Bull. Den. Univ., vol. 2, pl. 2, fig. 10. Coal Measures: Flint Ridge, Ohio.
- 1888. Discina, sp. Herrick, Bull. Den. Univ., vol. 4, pl. 9, fig. 2. Bedford Shale: Central College, Ohio.
- 1892. Orbiculoidea, sp. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 4F, fig. 31. Coal Measures: Near Nebraska City, Nebraska.
- 1892. Orbiculoidea sp. ? Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 4K, fig. 4. St. Louis L. S.: Crittenden County, Kentucky.
- 1895. Discina, sp. Herrick, Geol. Surv. Ohio, vol. 7, pl. 20, fig. 2. Bedford Shale: Central College, Ohio.

# OROPHOCRINUS von Seebach, 1864.

# Orophocrinus campanulatus Hambach.

- 1884. Codonites campanulatus. Hambach, Trans. St. Louis Acad. Sci., vol. 4, p. 553, pl. D, figs. 8, 9.
  - Lower Burlington L. S.: Sedalia, Missouri.
- 1886. Orophocrinus stelliformis var. campanulatus. Etheridge and Carpenter, Cat. Blast., p. 289, pl. 16, fig. 5.
  - Lower Burlington L. S.: Burlington, Iowa.
- 1894. Orophocrinus campanulatus. Keyes, Mo. Geol. Surv., vol. 4, p. 142. Lower Burlington L. S.: Sedalia, Missouri.

# Orophocrinus conicus Wachsmuth and Springer.

1890. Orophocrinus conicus. Wachsmuth and Springer, Geol. Surv. Ill., vol. 8, p. 201, pl. 15, figs. 1-3.

Kinderhook Group: Le Grand, Iowa.

# Orophocrinus fusiformis Wachsmuth and Springer.

1890. Orophocrinus fusiformis. Wachsmuth and Springer, Geol. Surv. Ill., vol. 8, p. 203, pl. 17, fig. 4.

Kinderhook Group: Le Grand, Iowa.

### Orophocrinus gracilis Meek and Worthen.

- 1870. Codonites gracilis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 32. Lower Burlington L. S.: Burlington, Iowa.
- 1873. Codonites gracils. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 467, pl. 8, fig. 6.

Burlington L. S.: Burlington, Iowa.

# Orophocrinus inopinatus Rowley and Hare.

1891. Codonites inopinatus. Rowley and Hare, The Kansas City Scientist, vol. 5. p. 100, pl. 2, figs. 11, 12; p. 118, pl. 3, fig. 17. Lower Burlington L. S.: Louisiana, Missouri.

# Orophocrinus sirius White.

1862. Pentremites sirius. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 20, fig. 3. Upper Burlington L. S.: Burlington, Iowa.

### Orophocrinus stelliformis Owen and Shumard.

- 1850. Pentremites stelliformis. Owen and Shumard, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 67, pl. 7, figs. 16a, b. Subcarboniferous L. S.: Burlington, Iowa.
- 1852. Pentremites stelliformis. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 593, tab. 5 A, figs. 16a, b.
  Subcarboniferous L. S.: Burlington, Iowa.
- \*1864. Orophocrinus stelliformis. von Seebach, Nachr. K, Gesellsch. Wissensch. Gottingen, p. 110.
- 1873. Codonites stelliformis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 464, pl. 9, fig. 5.
  Burlington L. S.: Burlington, Iowa.
- 1874. Codonites stelliformis. Meek, Am. Jour. Sci. (3), vol. 7, p. 374.
- 1886. Orophocrinus stelliformis. Etheridge and Carpenter, Cat. Blast., p. 287,
  pl. 11, figs. 8, 9; pl. 15, figs. 11-15; pl. 16, figs. 5-7; pl. 17, fig. 12.
  Lower Burlington L. S.: Burlington, Iowa.
- 1894. Orophorinus stelliformis. Keyes, Mo. Geol. Surv., vol. 4, p. 141, pl. 17, figs. 14a, b.
  Lower Burlington L. S.: Hannibal, Louisiana, Sedalia and Springfield,
- Orophocrinus stelliformis var. campanulatus. See Orophocrinus campanulatus.

# Orophocrinus whitei Hall.

Missouri.

- 1861. Codaster whitei. Hall, Desc. New Spec. Crin., p. 10. Burlington L. S.
- 1861. Codaster Whitei. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 327. Burlington L. S.: Burlington, Iowa.
- 1893. Orophocrinus white. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 36, pl. 3, figs. 25-28.

Burlington L. S.: Burlington, Iowa.

# ORTHIS Dalman, 1827.

Orthis arachnoidea. See Derbya crassa.

Orthis burlingtonensis. See Rhipidomella burlingtonensis.

Orthis carbonaria. See Rhipidomella pecosi.

Orthis clarkensis. See Rhipidomella clarkensis.

Orthis cooperensis. See Rhipidomella dubia.

Orthis crenistria. See Derbya crassa.

Orthis dalyana. See Rhipidomella dalyana.

Orthis dubia. See Rhipidomella dubia.

# Orthis flava Winchell.

1865. Orthis flara. Winchell, Proc. Acad. Nat. Sci. Phil., p. 117.
Yellow S. S.: Burlington, Iowa.

Orthis inequalis. See Orthothetes inæqualis.

Orthis kaskaskiensis. See Derbya kaskaskiensis.

Orthis keokuk. See Derbya keokuk.

Orthis lasallensis. See Derbya crassa.

Orthis michelini. See Rhipidomella michelini and R. oweni.

Orthis michelini var. burlingtonsis. See Rhipidomella burlingtonsis.

Orthis michelini var. nevadensis. See Rhipidomella nevadensis.

Orthis missouriensis. See Rhipidomella missouriensis.

Orthis occasus. See Rhipidomella occasus.

Orthis oweni. See Rhipidomella oweni.

Orthis pecosi. See Rhipidomella pecosi.

Orthis pratteni. See Derbya crassa.

Orthis resupinata. See Schizophoria resupinata.

Orthis resupinoides. See Schizophoria resupinoides.

Orthis richmonda. See Derbya crassa.

Orthis robusta. See Derbya robusta.

Orthis striato-costata. See Meekella striatocostata.

Orthis subelliptica. See Rhipidomella subelliptica.

Orthis swallovi. See Schizophoria swallovi.

Orthis thiemii. See Rhipidomella thiemei.

Orthis umbraculum. See Derbya crassa and Orthothetes imbraculum.

Orthis vanuxemi. See Rhipidomella vanuxemi.

Orthis vanuxemi var. gracilis. See Rhipidomella vanuxemi var. pulchellus.

Orthis vanuxemi var. pulchellus. See Rhipidomella vanuxemi var. pulchellus.

# (ORTHISINA D'Orbigny, 1850.)

Orthisina crassa. See Derbya crassa.

Orthisina missouriensis. See Meekella striatocostata.

Orthisina occidentalis. See Meekella striatocostata.

Orthisina shumardiana. See Meekella striatocostata.

Orthisina umbraculum. See Derbya crassa.

Orthisina (species undetermined).

1859. Orthisina, sp. (†) Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 395. White Permian L. S.: Guadalupe Mountains.

### ORTHOCERAS Breynius, 1732.

Orthoceras aculeatum Swallow.

1858. Orthoceras aculeatum. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 200. Upper Coal Measures: Valley of Kansas River, Kansas.

Orthoceras annulo-costatum. See Orthoceras randolphense.

Orthoceras arcuatellum Winchell.

1862. Orthocoras arcuatellum? Winchell, Am. Jour. Sci. (2), vol. 33, p. 355.
Marshall S. S.: Marshall, Michigan.

#### Orthoceras baculum Meek.

1860. Ortaoceras baculum. Meek, Proc. Acad. Nat. Sci. Phil., p. 310.

Lower Carboniferous ?: East side of Ruby Valley, latitude 40°, longitude 115° 20'.

1876 Orthoceras baculum. Meek, Simpson's Expl. Gt. Basin Utalı, p. 354, pl. 1, figs. 10a, b.

Lower Carboniferous ?: East side of Ruby Valley.

### Orthoceras chemungense Swallow.

1860. Orthoceras Chemungense. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 660. Lithographic L. S.: Marion and Pike counties, Missouri.

Orthoceras chemungense var. chouteauense. See Orthoceras chouteauense.

#### Orthoceras chesterense Swallow.

1863. Orthoceras Chesterense. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 98. Ste. Genevieve L. S.: Chester, Illinois; St. Mary's, Missouri.

1894. Orthoceras chesterense. Keyes, Mo. Gool. Surv., vol. 5, p. 225. Kaskaskia L. S.: Sto. Mary, Missouri.

# Orthoceras chouteauense Swallow.

1860. Orthoceras Chemungense, var. Chouteauense. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 660.

Chouteau L. S.: Cooper County, Missouri.

1894. Orthoceras chouteauense. Keyes, Mo. Geol. Surv., vol. 5, p. 225. Chouteau L. S.: Cooper County and Louisiana, Missouri.

#### Orthoceras clinocameratum Winchell.

1862. Orthoceras clinocameratum. Winehell, Am. Jour. Sci. (2), vol. 33, p. 356.

Marshall S. S.: Hardwood Pt., on shore of Saginaw Bay, Michigan.

# Orthoceras colletti Miller.

1892. Orthoceras colletti. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 67, pl. 10, fig. 1.

Upper Coal Measures: Kansas City, Missouri.

1894. Orthoceras colletti. Miller, 18th Rep. Geol. Surv. Ind., p. 321, pl. 10, fig. 1. Upper Coal Measures: Kansas City, Missouri.

### Orthoceras cribrosum Geinitz.

1866. Orthoceras cribrosum. Geinitz, Carbon. und Dyas in Nebr., p. 4. tab. 1, fig. 5.

Nebraska City, Nebraska.

1872. Orthoceras cribrosum. Meek, U. S. Geol. Surv. Nebr., p. 234, pl. 11, figs. 18a, b. Upper Coal Measures: Nebraska City, Nebraska; Illinois. Lower Coal Measures: Illinois; West Virginia.

1887. Orthoceras cribrosum? Herrick, Bull. Den. Univ., vol. 2, p. 17, pl. 5, fig. 2. Coal Measures: Flint Ridge, Ohio.

1892. Orthoceras cribrosum. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 65.
Upper Coal Measures: Turner Station, near Kansas City, Missouri.

1894. Orthoceras cribrosum. Miller, 18th Rep. Geol. Surv. Ind., p. 319.

Upper Coal Measures: Turner Station, near Kansas City, Missouri.

1897. Orthoceras cribrosum. Smith, Proc. Am. Phil. Soc., vol. 35, p. 43.
Upper Coal Measures: Poteau Mountain, Indian Territory.

#### Orthoceras dædalus Hall. See Orthoceras indianense.

#### Orthoceras dawsonanum Miller.

1868. Orthoceras perstrictum. Dawson, Acad. Geol., page 312, fig. 129. (Not O. perstrictum Barrande.)

Carboniferous L. S.: Windsor, Nova Scotia.

1883. Orthoceras dawsonanum. Miller, Am. Pal. Foss., 2d Ed., p. 307.

#### Orthoceras dolatum Dawson.

1868. Orthoceras dolatum. Dawson, Acad. Geol., p. 311, fig. 126. Carboniferous L. S.: Windsor, Nova Scotia.

### Orthoceras epigrus Hall.

- 1856. Orthoceras epigrus. Hall, Trans. Albany Inst., vol. 4, p. 33.
  St. Louis L. S.: Spergen Hill, Indiana.
- 1882. Orthoceras epigrus. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1. p. 91, pl. 8, fig. 2.
  - St. Louis Group: Spergen Hill, Indiana.
- 1883. Orthoceras epigrus. Hall, 12th Rep. Geol. Surv. Ind., p. 373, pl. 31, fig. 2. St. Louis Group: Spergen Hill and Lanesville, Indiana.

#### Orthoceras eurekense Walcott.

- 1884. Orthoceras Eurekensis. Walcott, Pal. Eureka Dist., p. 265, pl. 23, figs. 2, 2a. Lower Carboniferous: Eureka District, Nevada.
- 1897. Orthoceras eurekensis (?) Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 270, pl. 20, figs. 3, 3a.
  Batesville S. S.: Batesville, Arkansas.

# Orthoceras expansum Meek and Worthen.

- 1860. Orthoceras expansum. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 468. Carboniferous: McDonough County, Illinois.
- Actinoceras expansum. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 148.
- 1866. Orthoceras expansum. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 286, pl. 20, figs. 8a-c.
  - St. Louis Group 7: McDonough County, Illinois.

### Orthoceras fanslerensis Keyes.

1896. Orthoceras fanslerensis. Keyes, Proc. Iowa Acad. Sci., vol. 3, p. 77, fig. 4. Lower Coal Measures: Fanslers, Guthrie County, Iowa.

# Orthoceras harttanum Miller.

1868. Orthoceras laqueatum. Hartt, Dawson's Acad. Geol., p. 312, fig. 128. (Not O. laqueatum Hall, 1847.)

Carboniferous L. S.: Windsor, Nova Scotia.

1883. Orthoceras harttunum. Miller, Am. Pal. Foss., 2d Ed., p. 307.

#### Orthoceras harii Miller.

1891. Orthoceras karii. Miller, Adv. Sheets, 17th Rep. (icol. Surv. Ind., p. 87, pl. 16, fig. 2.

Upper Coal Measures: Near Kansas City, Missouri.

1892. Orthoceras harii. Miller, 17th Rep. Geol. Surv. Ind., p. 697, pl. 16, fig. 2. Upper Coal Measures: Near Kansas City, Missouri.

# Orthoceras heterocinctum Winchell.

- 1863. Orthoceras heterocinctum. Winchell, Proc. Acad. Nat. Sci. Phil., p. 23. Yellow S. S. to base of Burlington L. S.: Burlington, Iowa.
- 1888. Orthoceras heterocinctum? Herrick, Bull. Den. Univ., vol. 4, p. 47. Waverly Group: Lodi and Burbank, Ohio.

#### Orthoceras icarus Hall.

1886. Orthoceras Icarius. Hall, 5th Ann. Rep. N. Y. State Geol., pl. (118) 2, figs. 11-15.

Goniatite L. S.: Rockford, Indiana.

1888. Orthoceras Icarus. Beecher, Pal. N. Y., vol. 5, pt. 2, Supp., p. 31, pl. 118, figs. 11-15.
Goniatite L. S.: Rockford, Indiana.

# Orthoceras illinoiense Worthen.

- 1883. Orthoceras Illinoiensis. Worthen, Geol. Surv. Ill., vol. 7, p. 323. Chester L. S.: Chester, Illinois.
- 1890. Orthoceras illinoiensis. Worthen, Geol. Surv. Ill., vol. 8, p. 148, pl. 26, figs. 1-1b.

Chester L. S.: Chester, Illinois.

### Orthoceras indianense Hall.

- 1860. Orthocoras indianonsis. Hall, 13th Ann. Rep. N. Y. State Cab. Nat. Hist.,
  - Goniatite L. S.: Rockford, Indiana.
- 1862. Orthoceras Indianensis. Winchell, Am. Jour. Sci. (2), vol. 33, p. 354. Marshall S.S.: Marshall, Calhoun County; Holland, Ottawa County; Moscow, Hillsdale County; Hardwood Point, Huron County, Michigan.
- 1863. Orthoceras Indianense. Winchell, Proc. Acad. Nat. Sci. Phil., p. 23. Yellow S. S.: Burlington, Iowa.
- 1865. Orthoceras Indianense. Winchell, Proc. Acad. Nat. Sci. Phil., p. 132. Marshall Group: Hillsdale and Napoleon Cut, Jackson County, Michigan.
- 1870. Orthocerae Indianense. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 258. Waverly Group: Sciotoville, Ohio.
- 1886. Orthocoras Dadalus. Hall, 5th Ann. Rep. N. Y. State Geol., pl. (118) 2. figs. 6-10.
  - Goniatite L. S.: Rockford, Indiana.
- 1888. Orthoceras Indianense. Beecher, Pal. N. Y., vol. 5, pt. 2, Supp., p. 30, pl. 118, figs. 6-10.

Goniatite L. S.: Rockford, Indiana.

1888. Orthoceras indianense. Herrick, Bull. Den. Univ., vol. 3, pl. 9, figs. 33, 34. Waverly Group: Licking County, Ohio.

#### Orthoceras isogramma Meek.

1871. Orthoceras f isogramma. Meek, Proc. Acad. Nat. Sci. Phil., p. 172. Lower Coal Measures: Newark, Ohio.

# Orthoceras kikapooense Swallow.

1858. Orthoceras kikapooense. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 197. Upper Permian: Near Smoky Hill Fork, Kansas.

# Orthoceras knoxense McChesney.

1860. Orthoceras knozensis. McChesney, Desc. New Pal. Foss., p. 69. Coal Measures: Danville, Springfield, Peoria, and Dr. E. Hall's mill, Knox County, Missouri.

#### Orthoceras laqueatum. See Orthoceras harttanum.

# Orthoceras lasallense Worthen.

- 1883. Orthoceras La Sallensis. Worthen, Geol. Surv. Ill., vol. 7, p. 324. Coal Measures: Lasalle, Illinois.
- 1890. Orthoceras lasallense. Worthen, Geol. Surv. Ill., vol. 8, p. 149, pl. 26, figs. 4, 4a.

Coal Measures: Lasalle, Illinois.

# Orthoceras laterale Dawson.

1868. Orthoceras laterale. Dawson, Acad. Geol., p. 311. Carboniferous L. S.: Kennetcook, Nova Scotia.

# Orthoceras marshallense Winchell.

1862. Orthoceras Marshallense. Winchell, Am. Jour. Sci. (2), vol. 33, p. 356. Marshall S. S.: Marshall, Michigan.

### Orthoceras michiganense Miller.

1862. Orthoceres multicinctum. Winehell, Proc. Acad. Nat. Sci. Phil., p. 429. (Not O. multicinctum Hall, 1862.)

Marshall Group: Marshall and Holland, Michigan.

1833. Orthoceras michiganense. Miller, Am. Pal. Foss., 2d ed., p. 308.

Orthoceras moniliforme. See Orthoceras swallowanum.

Orthoceras multicinctum. See Orthoceras michiganense.

Orthoceras munsterianum Meek and Worthen.

1873. Orthoceras Munsterianum? Mook and Worthen, Geol. Surv. Ill., vol. 5, pl. 23, figs. 5a-d.

St. Louis Group.

# Orthoceras nobile Meek and Worthen.

1865. Orthoceras sobile. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 256. Chester Group: Randolph County, Illinois.

#### Orthoceras nova-mexicanum Marcou.

1858. Orthoceras nora-mericana. Marcou, Geol. N. A., p. 44, pl. 7, fig. 1.
Mountain L. S.: Near summit of the Sierra de Sandia, behind Albuquerque, New Mexico.

# Orthoceras occidentale Swallow.

1858. Orthoceras occidentale. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 201. Upper Coal Measures: Clifton Park, Kansas.

1894. Orthoceras occidentals. Keyes, Mo. Geol. Surv., vol. 5, p. 226. Upper Coal Measures: Kansas City, Missouri.

Orthocerus occidentale. See Orthoceras vinchellanum.

# Orthoceras okawense Worthen.

1883. Orthoceras Okawensis. Worthen, Geol. Surv. Ill., vol. 7, p. 324.

Chester L. S.: Okaw bluff, near Red Bud, Randolph County, Illinois.

1890. Orthoceras okawense. Worthen, Geol. Surv. Ill., vol. 8, p. 149, pl. 26, fig. 3. Chester L. S.: Near Red Bud, Randolph County, Illinois.

Orthoceras perstrictum Dawson. See Orthoceras dawsonauum.

### Orthoceras randolphense Worthen.

1861. Orthoceras annulo-costatum. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 147. (Not O. annulato-costatum Boll, 1857.) Chester L. S.: Chester, Illinois.

1866. Orthoceras annulato-costatum. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 304, pl. 24, figs. 3a, b.

Chester Group: Chester, Illinois.

1882. Orthoceras Randolphensis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 38.

Chester Group.

1884. Orthoceras Randolphensis? Walcott, Pal. Eureka Dist., p. 265, pl. 18, fig. 17. Lower Carboniferous: Eureka District, Nevada.

#### Orthoceras reticulatum Winchell.

1862. Orthoceras reticulatum? Winchell, Am. Jour. Sci. (2), vol. 33, p. 357. Marshall S. S.: Marshall, Michigan.

#### Orthoceras robustum Winchell.

1862. Orthoceras robustum. Winchell, Am. Jour. Sci. (2), vol. 33, p. 355. Marshall S. S.: Marshall, Moscow, and Hanover, Michigan.

# Orthoceras rushense McChesney.

- 1860. Orthoceras rushensis. McChesney, Desc. New Pal. Foss., p. 68.

  Coal Measures: Rush Creek, 5 miles below New Harmony, Indiana.
- 1873. Orthoceras Rushensis? Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 612, pl. 30, fig. 4.

Upper Coal Measures: Springfield, Illinois.

- 1884. Orthoceras Rushensis. White, 13th Rep. Geol. Surv. Ind., p. 164, pl. 36, fig. 5.
  Coal Measures: Eugene, Newport, Lodi, Merom, Graysville, New Harmony,
  Rush Creek, and Newberg, Indiana.
- 1888. Orthoceras rushensis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 242.

Lower Coal Measures: Des Moines, Iowa.

- 1888. Orthocoras rushenois? Herrick, Bull. Den. Univ., vol. 4, pl. 7, fig. 1. Waverly Group: Ohio.
- 1891. Orthoceras rushensis? White, Bull. U. S. Geol. Surv., No. 77, p. 22, pl. 2, figs. 14-16.
  - Permian: Military Crossing, Baylor County, Texas.
- 1894. Orthoceras rushense. Keyes, Mo. Geol. Surv., vol. 5, p. 226, pl. 56, fig. 6. Upper Coal Measures: Kansas City, Missouri.
- 1895. Orthoceras rushensis (?). Herrick, Geol. Surv. Ohio, vol. 7, pl. 18, fig. 1. Cuyahoga Shale: Ohio.
- 1897. Orthoceras conf. rushensis. Smith, Proc. Am. Phil. Soc., vol. 35, p. 43. Upper Coal Measures: Scott County, Arkansas.

### Orthoceras swallovanum Miller.

- 1858. Orthoceras moniliforms. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 200. (Not O. moniliforms Hall, 1847.)
- Coal Measures: Valley of Verdigris River, Kansas.

  1883. Orthoceras swallovanum. Miller, Am. Pal. Foss., 2d ed., p. 308.

### Orthoceras vinchellanum Miller.

- 1862. Orthoceras occidentale. Winchell, Am. Jour. Sci. (2), vol. 33, p. 356. (Not O. occidentale Swallow, 1858.)
  - Marshall S S: Marshall and Moscow, Michigan.
- 1883. Orthoceras vinchellanum. Miller, Am. Pal. Foss., 2d ed., p. 308.

#### Orthoceras vindobonense Dawson.

1868. Orthoceras Vindobonense. Dawson, Acad. Geol., p. 311, fig. 127. Carboniferous L. S.: Windsor, Nova Scotia.

# Orthoceras vittatum Winchell.

1862. Orthoceras vittatum? Winchell, Am. Jour. Sci. (2), vol. 33, p. 355.
Marshall S. S.: Battle Creek and Holland, Michigan.

# Orthoceras whitii Winchell.

1863. Orthoceras Whitei. Winchell, Proc. Acad. Nat. Sci. Phil., p. 22. Yellow S. S.: Burlington, Iowa.

# Orthoceras (undetermined species).

- 1859. Orthocoras sp. (†) Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 400.

  Dark Permian L. S.: Guadalupe Mountains.
- 1862. Orthoceras sp. ? Winchell, Am. Jour. Sci. (2), vol. 33, p. 357.
  Marshall S. S.: Marshall, Michigan.
- 1873. Orthoceras (sp. undet.). Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 30, fig. 5.
  Coal Measures.
- 1884. Orthoceras sp. f Walcott, Pal. Eureka Dist., p. 266. Lower Carboniferous: Eureka District, Nevada.
- 1886. Orthoceras sp. ? Heilprin, 2d Geol. Surv. Penn., Ann. Rep. for 1885, p. 457.
  Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.

# Orthoceras (undetermined species)—Continued.

- 1886. Orthoceras sp. † Heilprin, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 277.
  - Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.
- 1888. Orthoceras (sp. undt.). Keyes, Proc. Acad. Nat. Sci. Phil., p. 242.
  Lower Coal Measures: Des Moines, Iowa.
- 1888. Orthoceras sp. ? Herrick, Bull. Den. Univ., vol. 3, pl. 12, fig. 30. Waverly Group: Licking County, Ohio.
- 1888. Orthoceras sp. Herrick, Bull. Den. Univ., vol. 4, pl. 9, fig. 16. Bedford Shale: Central College, Ohio.
- 1889. Orthoceras sp. Herrick, Am. Geol., vol. 3, pl. 4, fig. 16. Bedford Shale Ohio.
- 1895. Orthoceras sp. Herrick, Geol. Surv. Ohio., vol. 7, pl. 20, fig. 16. Shale above Berea Grit: Ohio.
- 1897. Orthoceras sp. Smith, Proc. Am. Phil. Soc., vol. 35, p. 44.
  Lower Coal Measures: Conway County, Arkansas.

# ORTHONEMA Meek and Worthen, 1861.

#### Orthonema carbonarium Worthen.

- 1884. Orthonema carbonaria. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 7. Coal Measures: Peoria County, Illinois.
- 1890. Orthonema carbonarium. Worthen, Geol. Surv. Ill., vol. 8, p. 145, pl. 24, figs. 4, 4a.

Coal Measures: Peoria County, Illinois.

#### Orthonema conicum Meek and Worthen.

- 1866. Orthonema conica. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 270. Lower Coal Measures: Hodge's Creek, Macoupin County, Illinois.
- 1873. Orthonema conica. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 590, pl. 29, fig. 5.
  - Coal Measures: Hodge's Creek, Macoupin County, Illinois.
- 1888. Orthonema conica. Keyes, Proc. Acad. Nat. Sci. Phil., p. 240. Lower Coal Measures: Des Moines, Iowa.

# Orthonema salteri Meek and Worthen.

- 1860. Eunema ? Salteri. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 464. Upper CoaleMeasures: Springfield, Illinois.
- 1866. Orthonema Salteri. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 381, pl. 31, figs. 14a-c.

Lower Coal Measures: Hodge's Creek, Macoupin County, Illinois.

### Orthonema subtæniatum Geinitz.

- 1866. Murchisonia subtaeniata. Geinitz, Carb. und Dyas in Nebr., p. 12, tab. 1, fig. 18.
  - Nebraska City, Nebraska.
- 1872. Orthonema subtæniata. Meek, U. S. Geol. Surv. Nebr., p. 228, pl. 11, fig. 10. Upper Coal Measures: Nebraska City, Nebraska; Western Iowa.

# Orthonema (species undetermined).

1887. Orthonema? sp. Herrick. Bull. Den. Univ., vol. 2, pl. 14, fig. 10. Coal Measures: Flint Ridge, Ohio.

### ORTHONOTA Conrad, 1841.

# Orthonota phaselia Winchell.

1863. Orthonota phaselia. Winchell, Proc. Acad. Nat. Sci. Phil., p. 12. Yellow S. S.: Burlington, Iowa.

#### Orthonota rectidorsalis Winchell.

1862. Orthonota rectidorsalis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 414.
Marshall Group: Moscow, Michigan.

1888. Orthonota rectidorsalis. Herrick, Bull. Den. Univ., vol. 3, p. 65, pl. 9, fig. 6. Waverly Group: Licking County, Ohio.

Orthonota ventricosa. See Spathella ventricosa.

### ORTHONYCHIA Hall, 1843.

### Orthonychia acutirostre Hall.

1856. Capulus acutirostris. Hall, Trans. Albany Inst., vol. 4, p. 31.
St. Louis L. S.: Spergen Hill and Bloomington, Indiana.

1858. Capulus acutirostris. Hall, Geol. Iowa, vol. 1, pt. 2, p. 665, pl. 23, figs. 14a, b. Warsaw L. S.: Warsaw, Illinois; Spergen Hill and Bloomington, Indiana.

1866. Plutyceras uncum. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 264. Keokuk L. S.: Nauvoo, Illinois.

1873. Platyceras uncum. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 516, pl. 17, fig. 1.
Keokuk L. S.: Nauvoo, Illinois.

1882. Platyceras acutirostris. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 67, pl. 8, figs. 13-15.

St. Louis Group: Spergen Hill, Paynter's Hill, Elletsville, Bloomington, and Crawfordsville, Indiana; Warsaw, Illinois; Tuscumbia, Alabama.

1883. Platyceras acutirostris. Hall, 12th Rep. Geol. Surv. Ind., p. 370, pl. 31, figs. 13-15.

St. Louis Group: Spergen Hill, Lanesville, and Bloomington, Indiana.

1886. Capulus acutirostris. Claypole, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 246.

Lower Coal Measures: Wilkesbarre, Pennsylvania.

1890. Capulus acutirostris. Keyes, Am. Geol., vol. 6, p. 9.

1890. Capulus acutirostris. Keyes, Proc. Acad. Nat. Sci. Phil., p. 170.
Keokuk Group: Warsaw and Nauvoo, Illinois.
St. Louis L. S.: Spergen Hill and Bloomington, Indiana; Tuscumbia, Alabama.

1892. Orthonychia acutirostre. Keyes, Am. Geol., vol. 10, p. 276.

1894. Orthonychia acutirostre. Keyes, Mo. Geol. Surv., vol. 5, p. 190, pl. 54, tigs.

Keokuk L. S. and Shale: Warsaw and Nauvoo, Illinois.

St. Louis L. S.: Spergen Hill and Bloomington, Indiana; Tuscumbia, Alabama.

1897. Capulus acutirostris. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 268. Batesville, S. S.: Batesville, Arkansas.

# Orthonychia boonvillense Miller.

1891. Platyceras boonvillense. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Inc., p. 82, pl. 14, figs. 15, 16.

Keokuk Group: Boonville, Missouri.

1892. Platyceras boonvillence. Miller, 17th Rep. Geol. Surv. Ind., p. 692, pl. 14, figs. 15, 16.

Keokuk Group: Boonville, Missouri.

1894. Orthonychia boonvillense. Keyes, Mo. Geol. Surv., vol. 5, p. 189. Keokuk L. S.: Boonville, Missouri.

# Orthonychia chesterense Meek and Worthen.

1866. Platyceras (Orthonychia) chesterense. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 265.

Chester Group: Pope County, and Chester, Illinois.

# Orthonychia chesterense Meek and Worthen-Continued.

- 1898. Platyceras chesterense. Keyes, Proc. Am. Phil. Soc., vol. 25, p. 242, pl., figs. 4.5.
- 1890. Capulus chesterensis. Keyes, Am. Geol., vol. 6, p. 9.
- 1890. Capulus chesterensis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 176, pl. 2, figs. 13a-d.
  - Chester Group: Chester, Illinois; Pope County, Illinois; Pulaski County, Kentucky.
- 1892. Orthonychia chesterense. Keyes, Am. Geol., vol. 10, p. 276.
- 1894. Orthonychia chesterense. Keyes, Mo. Geol. Surv., vol. 5, p. 191, pl. 54, figs. 1a-d.

Kaskaskia L. S.: Ste. Genevieve, Missouri,

### Orthonychia cornuforme Winchell.

- 1863. Platyceras cornuforme. Winchell, Proc. Acad. Nat. Sci. Phil., p. 18. Yellow S. S.: Burlington, Iowa.
- 1889. Platyceras cornuforme. Keyes, Proc. Acad. Nat. Sci. Phil., p. 294. Kinderhook Group: Burlington, Iowa.
- 1890. Capulus cornuforms. Keyes, Proc. Acad. Nat. Sci. Phil., p. 164, pl. 2, fig. 5. Kinderhook Beds: Burlington, Iowa; Lodi, Ohio.
- 1892. Orthonychia cornuforme. Keyes, Am. Geol., vol. 10, p. 276.

#### Orthonychia cyrtolites McChesney.

- 1860. Platyceras cyrtolites. McChesney, Desc. New Pal. Foss., p. 71. Burlington L. S.: Calhoun County, Illinois.
- 1889. Platyceras cyrtolites. Keyes, Proc. Acad. Nat. Sci. Phil., p. 288. Burlington L. S.: Burlington, Iowa.
- 1890. Capulus cyrtolites. Keyes, Am. Geol., vol. 6, p. 9.
- 1890. Capulus cyrtolites. Keyes, Proc. Acad. Nat. Sci. Phil., p. 167, pl. 2, fig. 2. Burlington L. S.: Burlington, Iowa; Calhoun County, Illinois.
- 1892. Orthonychia cyrtolites. Keyes, Am. Geol, vol. 10, p. 276.
- 1894. Orthonychia cyrtolites. Keyes, Mo. Geol. Surv., vol. 5, p. 188, pl. 53, fig. 15. Burlington L. S.: Hannibal, Missouri.

# Orthonychia formosum Keves.

- 1888. Platyceras formosum. Keyes, Proc. Am. Phil. Soc., vol. 25, p. 242, pl., figs. 8, 9. Kinderhook Group: Marshall County, Iowa.
- 1890. Capulus formosus. Keyes, Am. Geol., vol. 6, p. 9.
  1890. Capulus formosus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 164, pl. 2, fig. 8. Kinderhook Beds: Marshall County, Iowa.
- 1892. Orthonychia formosum. Keyes, Am Geol., vol. 10, p. 276.
- 1894. Orthonychia formosum. Keyes, Mo. Geol. Surv., vol. 5, p. 189, pl. 53, fig. 2. Kinderhook Group: Marshall County, Iowa. Burlington L. S.: Louisiana, Missouri.

# ORTHOTHETES Fischer de Waldheim, 1830.

# Orthothetes crenistria Phillips.

- 1863. Streptorhynchus crenistria. Davidson, Quart. Jour. Geol. Soc. Lond., vol. 19, p. 173, pl. 9, fig. 19.
  - Carboniferous: Shubenacadie, Nova Scotia.
- 1865. Streptorhynchus umbraculum? Winchell, Proc. Acad. Nat. Sci. Phil., p. 117. Marshall Group: Warren, Trumbull County, Ohio. Oolitic L. S.: Burlington, Iowa.
- 1868. Streptorhynchus crenistria. Dawson, Acad. Geol., p. 296, fig. 96. Carboniferous L. S.: East River, Picton, Nova Scotia.
- 1870. Hemipronites umbraculum? Winchell, Proc. Am. Phil. Soc., vol. 11, p. 251. Waverly Group: Newark, Sciotoville, and Rockville, Ohio; near Shafers, Pennsylvania.

Bull. 153——26

# Orthothetes crenistria Phillips-Continued.

- 1875. Hemipronites crenistria. Meek, Pal. Ohio, vol. 2, p. 279, pl. 10, figs. 5a-d. Waverly Group: Medina County, Ohio.
- 1877. Hemipronites crenistria. Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 62, pl. 7, fig. 2.
  - Carboniferous: Fossil Hill, White Pine District; White Pine County, 25 miles northeast of Hamilton; and Railroad Canyon, Diamond Mountains, Navada.
- 1878. Streptorhynchus crenistria. Etheridge, Quart. Jour. Geol. Soc. Lond., vol. 34, p. 632.

Carboniferous: Feilden Isthmus, latitude 82° 43'.

- 1888. Hemipronites orenistria. Herrick, Bull. Den. Univ., vol. 3, p. 37; pl. 3, fig. 39;
   pl. 5, fig. 14; pl. 6, figs. 8, 9; pl. 9, fig. 21.
   Waverly Group: Licking County. Ohio.
- 1888. Hemipronites crenistria. Herrick, Bull. Den. Univ., vol. 4, p. 24, pl. 2, fig. 1.
  Waverly Group: Moot's Run, Licking County, and Sciotoville, Ohio.
- 1892. Orthothetes cronistria. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 11A, fig. 15.

Waverly Group: Sciotoville, Ohio.

1895. Hemipronites cremistria. Herrick, Geol. Surv. Ohio, vol. 7, pl. 15, fig. 1; pl. 21, fig. 14.

Cuyahoga Shale: Sciotoville, Ohio.

Kinderhook: Granville, Ohio.

# Orthothetes desideratus Hall and Clarke.

1883. Streptorhynchus sp. f Hall, Rep. N. Y. State Geol. for 1882, pl. 8 (11A) 42, figs. 26, 27.

Waverly Group: Ohio.

1892. Orthothetes desideratus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, p. 345, pl. 9A, figs. 26, 27.

Waverly Group: Medina County, Ohio.

1897. Orthothetes desideratus. Hall, 14th Rep. N. Y. State Geol., p. 345, pl. 5, figs. 1, 2.

Waverly Group: Medina County, Ohio.

#### Orthothetes inequalis Hall.

- 1858. Orthis inequalis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 490, pl. 2, figs. 6a-c. Chemung Group: Burlington, Iowa.
- 1865. Streptorhynchus inequalis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 117.
  Marshall Group: Weymouth, Medina County, Ohio, 80 feet below conglomerate.
- 1870. Hemipronites inequalis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 251.

  Waverly Group: Newark and Granville, Ohio; near Shafer's, Pennsylvania.
- 1877. Streptorhynchus equivalvis. Hall and Whitfield, U. S. Geol. Expl. 40 Par., p. 252, pl. 4, figs. 1, 2.

Waverly Group: Ogden and Logan Canyons, Utah.

1883. Streptorhynchus æquivalvis. Hall, Rep. N. Y. State Geol. for 1882, pl. (11A) 42, figs. 20-23.

Waverly Group: Burlington, Iowa.

1892. Orthothetes inæqualis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 9A, figs. 20-23.

Kinderhook Group: Burlington, Iowa.

# Orthothetes inflatus White and Whitfield.

1862. Streptorhynchus inflatus. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 293.

Chemung Group: Burlington, Iowa.

# Orthothetes inflatus White and Whitfield—Continued.

- 1877. Streptorhynchus inflatus. Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 252, pl. 4, fig. 3.
  - Waverly Group: Dry Canyon, Oquirrh Mountains, Utah.
- 1883. Streptorhynchus inflatus. Hall, Rep. N. Y. State Geol. for 1882, pl. (11▲) 42, figs. 24, 25.
- 1892. Orthothetes inflatus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 9A, figs. 24, 25.
  Kinderhook Group: Burlington, Iowa.

#### Orthothetes lens White.

- 1862. Streptorhynchus lens. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 28.
  Chemung Group: Burlington, Iowa; Clarkesville, Missouri; Hamburg,
  Illinois.
- 1865. Streptorhynchus lens? Winchell, Proc. Acad. Nat. Sci. Phil., p. 117.
  Marshall Group: Weymouth, Medina County, Ohio, 80 feet below conglomerate.
- 1892. Orthothetes lens. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 16, figs. 12-16.
  - Chouteau L. S.: Louisiana, Missouri.
- 1892. Orthothetes lens. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 11A, figs. 16-22. Choteau L. S.: Louisiana, Missouri, and Pike County, Missouri.
- 1894. Streptorhynchus lens. Keyes, Mo. Geol. Surv., vol. 5, p. 67, pl. 39, figs. 2a, b. Louisiana L. S.: Louisiana and Clarksville, Missouri.

#### Orthothetes umbraculum Schlotheim.

- 1856. Orthis umbraculum. Hall, Trans. Albany Inst., vol. 4, p. 12. St. Louis L. S.: Spergen Hill, Indiana.
- 1883. Streptorhynchus (Orthis) Umbraculum. Hall, 12th Rep. Geol. Surv. Ind., p. 325.
  - St. Louis Group: Spergen Hill, Lanesville, and Bloomington, Indiana.

# Orthothetes (species undetermined).

- 1865. Streptorhynchus sp. f Winchell, Proc. Acad. Nat. Sci. Phil., p. 117. Marshall Group: Ashland, Ashland County, Ohio.
- 1888. Hemipronites young individual. Herrick, Bull. Den. Univ., vol. 4, pl. 2, fig. 5. Waverly Group: Moot's Run, Licking County, Ohio.
- 1888. Hemipronites. Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 25. Waverly Group: Cuyahoga Falls, Ohio.
- 1895. Hemipronites. Herrick, Geol. Surv. Ohio, vol. 7, pl. 15, fig. 5. Waverly Group: Moot's Run, Licking County, Ohio.

# ORYCTOBLATTINA Scudder, 1885.

# Oryctoblattina laqueata Scudder.

1895. Oryctoblattina laqueata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 133, pl. 11, fig. 6.

Upper Coal Measures: Kansas City, Missouri.

# Oryctoblattina occidua Scudder.

- 1885. Oryctoblattina occidua. Scudder, Proc. Acad. Nat. Sci. Phil., p. 37. Carboniferous: Mazon Creek, Illinois.
- 1890. Oryotoblattina occidua. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 414, pl. 32, fig. 3.
  Carboniferous: Mazon Creek, Illinois.
- 1890. Oryctoblattina occidua. Scudder, Foss. Insc. N. A., vol. 1, p. 390, pl. 24, fig. 3. Carboniferous: Mazon Creek, Illinois.
- 1895. Oryctoblattina occidua. Scudder, Bull. U. S. Geol. Surv., No. 124, p. 133. Lower Coal measures: Mazon Creek, Illinois.

# OSTREA Linnaeus, 1758.

# Ostrea patercula Winchell.

1865. Ostrea patercula. Winchell, Proc. Acad. Nat. Sci. Phil., p. 124. Buff S. S. at base of Burlington L. S.: Burlington, Iowa.

1884. Ostrea patercula. White, 4th Ann. Rep. U. S. Geol. Surv., p. 288, pl. 34. figs. 1, 2.

Kinderhook Group: Burlington, Iowa.

# PALÆACIS Edwards and Haime, 1860.

# Palæacis cavernosa Miller.

1891. Palwacis cavernosa. Miller, Adv. Sheets 17th Rep. Geol. Surv. Ind., p. 4, pl. 1, figs. 5, 6.

Knobstone Group: Jackson County, Indiana.

1892. Palæacis cavernosa. Miller, 17th Rep. Geol. Surv. Ind., p. 614, pl. 1, figs. 5, 6. Knobstone Group: Jackson County, Indiana.

# Palæacis compressus Meek and Worthen.

1860. Sphenopoterium compressum. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 448.

1866. Sphenopoterium compressum. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 234, pl. 17, figs. 1a-c.

Keokuk L. S.: Nauvoo, Illinois.

#### Palæacis cuneatus. See Palæacis cuneiformis.

# Palæacis cuneiformis Milne-Edwards.

1860. Palæacis cuneiformis. Milne-Edwards, Hist. Nat. Corall., vol. 3, p. 171, pl. E1, figs. 2a-d.

Carboniferous: Spergen Hill, Indiana.

1860. Sphenopoterium cuneatum. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 448.

Warsaw L. S.: Spergen Hill, Indiana.

1866. Sphenopoterium cuneatum. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 262, pl. 19, figs. 1a-d.

St. Louis Group: Spurgen Hill, Indiana.

1882. Palæacis cuneatus. White, 11th Rep. Geol. Surv. Ind., p. 369, pl. 41, figs. 8, 9. St. Louis Group: Spergen Hill, Indiana.

#### Palæacis enormis Meek and Worthen.

1860. Sphenopoterium enorme. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 448.

Goniatite Beds: Rockford, Indiana.

1866. Sphenopoterium enorme. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 146, pl. 14, figs. 1a, b.

Goniatite L. S.: Rockford, Indiana.

Kınderhook Group: Clarksville, Missouri.

1894. Palaacis enormis. Keyes, Mo. Geol. Surv., vol. 4, p. 118. Kinderhook Group: Clarksville and Louisiana, Missouri.

# Palæacis enormis var. depressus Meek and Worthen.

1866. Sphenopoterium enorme var. depressum. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 146, pl. 14, figs. 2a, b.

Kinderhook Group: Salt Lick Point, Monroe County, Illinois.

### Palæacis obtusus Meek and Worthen.

1860. Sphenopoterium obtusum. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 448.

#### Palmacis obtusus Meek and Worthen—Continued.

1866. Sphenopoterium obtusum. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 233, pl. 17, figs. 2a-e.

Keokuk L. S.: Nauvoo, Illinois.

1894. Palæacis obtusa. Keyes, Mo. Geol. Surv., vol. 4, p. 118, pl. 14, figs. 1a, b. Keokuk L. S.: Clark County, Missouri.

# PALÆASTER Hall, 1852.

#### Palæaster crawfordsvillensis Miller.

1880. Palwaster crawfordsvillensis. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 2, p. 256, pl. 15, fig. 3.

Keokuk Group: Crawfordsville, Indiana.

# (PALÆASTERINA McCoy, 1851.)

Palæasterina fimbriata. See Schoenaster fimbriatus.

# (PALÆCHINUS McCoy, 1844.)

Palæchinus burlingtonensis. See Rhæchinus burlingtonensis.

Palæchinus gracilis. See Rhæchinus gracilis.

# PALÆOCAMPA Meek and Worthen, 1865.

# Palæocampa anthrax Meek and Worthen.

- 1865. Palaccampa anthrax. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 52. Coal Measures: Morris, Illinois.
- 1866. Palæocampa anthrax. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 410, pl. 32, fig. 3.

Lower Coal Measures: Morris, Grundy County, Illinois.

- 1868. Palæocampa. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 565.
  Carboniferous: Mazon Creek, Illinois.
- 1884. Palæocampa anthrax. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 293, pl. 26.

Carboniferous: Mazon Creek, Illinois.

1890. Palaeocampa anthrax. Scudder, Foss. Insc. N. A., vol. 1, pp. 257, pl. 12, figs. 1-9.

Carboniferous: Mazon Creek, Illinois.

# PALÆOCARIS Meek and Worthen, 1865.

# Palæocaris typus Meek and Worthen.

1865. Palæocaris typus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 49. Coal Measures: Morris, Illinois.

1865. Acanthotelson inæqualis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 48.

Coal Measures: Morris, Ilinois

1866. Palæocaris typus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 405, pl. 32, figs. 5-5d.

Lower Coal Measures: Morris, Grundy County, Illinois.

1866. Acanthotelson inæqualis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 403, pl. 32, figs. 7, 7a.

Lower Coal Measures: Morris, Grundy County, Illinois.

# Palæocaris typus Meek and Worthen-Continued.

- 1868. Palæocaris typus. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 552, figs. A, B.
  - Coal Measures: Mazon Creek, Grundy County, Illinois.
- 1880. Palæocaris typus. Brocchi, Bull. Soc. Geol. France (3), vol. 8, p. 9, pl. 1, figs. 8-10.

Calcaire carbonifére: Illinois.

- 1884. Palæocaris typus. White, 13th Rep. Geol. Surv. Ind., p. 179, pl. 38, figs. 1-3. Coal Measures, Grundy County, Illinois.
- 1885. Palæocaris typus. Packard, Am. Nat., vol. 19, p. 790.
- 1886. Palaocarie typus. Packard, Mem. Nat. Acad. Sci., vol. 3, pt. 2, p. 129, pl. 3, figs. 1-4; pl. 7, figs. 1, 2.

Carboniferous: Mazon Creek, Illinois.

1889. Palaeocaris typus. Packard, Proc. Bost. Soc. Nat. Hist., vel. 24, p. 213. Coal Measures: Mazon Creek, Illinois.

# PALÆONEILO Hall, 1870.

### Palsoneilo attenuata Hall.

- \*1870. Palæoneilo attenuata. Hall, Prelim. Not. Lam. Shells, 2, p. 12. Waverly S. S.: Granville and Newark, Ohio.
- 1884. Palaeoneilo attenuata. Hall, Rep. N. Y. State Geol. for 1881, pl. 7, fig. 22. Waverly Group: Ohio.
- 1885. Palæoneilo attenuata. Hall, Pal. N. Y., vol. 5, pt. 1, p. 346, pl. 50, figs. 34-39. Waverly S. S.: Granville and Newark, Ohio.
- 1888. Palaeoneilo attenuata. Herrick, Bull. Den. Univ., vol. 3, p. 82, pl. 4, fig. 3; pl. 9, fig. 23.

Waverly Group: Licking County, Ohio.

#### Palæoneilo bedfordensis Meek.

- 1875. Palæoneilo Bedfordensis. Meek, Pal. Ohio, vol. 2, p. 298, pl. 15, figs. 3a-c. Bedford Shale: Bedford, Ohio.
- 1886. Palaeoneilo bedfordensis. Claypole, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, pp. 242, 248.

Lower Coal Measures: Wilkesbarre, Pennsylvania.

- 1888. Palaconcilo bedfordensis. Herrick, Bull. Den. Univ., vol. 4, pl. 9, fig. 8. Bedford Shale: Central College, Ohio.
- 1889. Palæoneilo bedfordensis. Herrick, Am. Geol., vol. 3, pl. 4, fig. 8. Bedford Shale: Ohio.
- 1895. Palæoneilo bedfordensis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 20, fig. 8. Shale above Berea Grit: Ohio.

### Palæoneilo concentrica var. Herrick.

1888. Palaeoneilo concentrica var. Herrick, Bull. Den. Univ., vol. 3, pl. 7, fig. 37. Waverly Group: Licking County, Ohio.

# Palæoneilo consimilis Herrick.

- 1888. Palæoneilo consimilis. Herrick, Bull. Den. Univ., vol. 4, p. 43, pl. 4, fig. 14. Waverly Group: Near Harlem, Delaware County, Ohio.
- 1889. Palæoneilo consimilis. Herrick, Am. Geol., vol. 3, pl. 2, fig. 14.
- 1895. Palæoneilo consimilis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 16, fig. 14.
  Base of Cuyahoga Shale: Harlem, Delaware County, Ohio.

# Palæoneilo curta Herrick.

- 1888. Palæoneilo (Nucula?) curta. Herrick, Bull. Den. Univ., vol. 4, p. 44, pl. 4, fig. 4.
  - Middle Waverly: Ohio.
- 1889. Palæoneilo curta. Herrick, Am. Geol., vol. 3, pl. 2, fig. 4.
- 1895. Palæoneilo curta. Herrick, Geol. Surv. Ohio, vol. 7, pl. 16, fig. 4. Kinderhook Freestone: Granville, Ohio.

### Palæoneilo elliptica Herrick.

1888. Palaeoneilo ellipticus. Herrick, Bull. Den. Univ., vol. 3, p. 80, pl. 9, figs. 13, 15.

Waverly Group: Licking County, Ohio.

# Palæoneilo elliptica var. allorismiformis Herrick.

1888. Palaeoneilo ellipticus var. allorismiformis. Herrick, Bull. Den. Univ., vol. 3, p. 81, pl. 4, fig. 12, lower figure.

Waverly Group: Licking County, Ohio.

# Palæoneilo elliptica var. elegantula Herrick.

1888. Palaeoneilo ellipticus var. elegantula. Herrick, Bull. Den. Univ..vol. 3, p. 81. Waverly Group: Licking County, Ohio.

# Palæoneilo elliptica var. plicatella Herrick.

1888. Palaeoneilo ellipticus var. plicatella. Herrick, Bull. Den. Univ., vol. 3, p. 81, pl. 4, fig. 12, upper figure.
Waverly Group: Licking County, Ohio.

# Palæoneilo ignota Herrick.

1888. Palwoneilo ignota. Herrick, Bull. Den. Univ., vol. 4, p. 44, pl. 4, fig. 15. Waverly Group: Moot's Run, Licking County, Ohio.

1889. Palæoneilo ignota. Herrick, Am. Geol., vol. 3, pl. 2, fig. 15.

1895. Palæoneilo ignota. Herrick, Geol. Surv. Ohio, vol. 7, pl. 16, fig. 15. Cuyshoga Shale: Moot's Run, Ohio.

# Palæoneilo marshallensis Winchell.

1862. Sanguinolites Marshallensis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 415. Marshall Group: Marshall, Michigan.

1870. Sanguinolites Marshallensis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 256. Waverly Group: Sciotoville, Ohio.

\*1883. Palæoneilo truncata. Hall, Pal. N. Y., vol. 5, pt. 1, Plates and Expl., pl. 50, figs. 40, 41.
Waverly Group: Bagdad, Ohio.

1885. Palæoreilo truncata. Hall, Pal. N. Y., vol. 5, pt. 1, p. 347, pl. 50, figs. 40, 41. Waverly S. S.: Richfield and Medina, Ohio,

1888. Sanguinolites marshallensis f. Herrick, Bull. Den. Univ., vol. 3, p. 67, pl. 5, fig. 11; pl. 7, fig. 10. .
Waverly Group: Licking County, Ohio.

1888. Palaeoneilo f marshallensis. Herrick, Bull. Den. Univ., vol. 4, pl. 4, fig. 18. Waverly Group: Rushville, Ohio.

1889. Palaoneilo ? marshallensis. Herrick, Am. Geol., vol. 3, pl. 2, fig. 18.

1895. Palæoneilo (†) marshallensis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 16, fig. 18; pl. 21, fig. 11.

Upper Waverly: Ohio.

Kinderhook: Granville, Ohio.

# Palæoneilo parallela Hall and Whitfield.

1873. Palæoneilo parallela. Hall and Whitfield, 23d Rep. N. Y. State Cab. Nat. Hist., p. 241.

Waverly S. S.: Newark and Bagdad, Ohio.

# Palæoneilo plicatella Herrick.

1888. Palæoneilo plicatella. Herrick, Bull. Den. Univ., vol. 3, pl. 4, fig. 9. Waverly Group: Licking County, Ohio.

#### Palæoneilo sulcatina Conrad.

1842. Nuculites sulcatina. Conrad, Jour. Acad. Nat. Sci. Phil. (1), vol. 8, p. 250, pl. 15, fig. 10.

Carboniferous: Hillsdale County, Michigan.

# Palmoncilo sulcatina Conrad—Continued.

- 1862. Leda Barrisi. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 298. Chemung Group: Burlington, Iowa.
- 1862. Nucula Hubbardi. Winchell, Proc. Acad. Nat. Sci. Phil., p. 417.
  Marshall Group: Marshall, Battle Creek, and Moscow, Michigan.
- 1862. Nucula Hubbardi var. prolata. Winchell, Proc. Acad. Nat. Sci. Phil., p. 418. Marshall Group: Moscow and Battle Creek, Michigan.
- 1865. Ctenodonta Hubbardi. Winchell, Proc. Acad. Nat. Sci. Phil., p. 128. Marshall Group: Napoleon Cut, Jackson County, Michigan.
- 1885. Palæoneilo suloatina. Hall, Pal. N. Y., vol. 5, pt. 1, p. 347, pl. 50, figs. 42-46.
  Waverly S. S.: Richfield and Newark, Ohio; Battle Creek and Hillsdale, Michigan.
- 1888. Palaeoneilo sulcatina. Herrick, Bull. Den. Univ., vol. 4, p. 44, pl. 4, fig. 17. Waverly Group: Union, Licking County, Ohio.
- 1889. Palæoneilo sulcatina. Herrick, Am. Geol., vol. 3, pl. 2, fig. 17.
- 1895. Palæoneilo sulcatina. Herrick, Geol. Surv. Ohio, vol. 7, pl. 16, fig. 17. Cuyahoga Shale: Ohio.

# Palæoneilo truncata. See Palæoneilo marshallensis.

# Palæoneilo (species undetermined).

- 1888. Palaeoneilo sp. Herrick, Bull. Den. Univ., vol. 3, pl. 7, fig. 8. Waverly Group: Licking County, Ohio.
- 1888. Sanguinolites, resembling marshallensis. Herrick, Bull. Den. Univ., vol. 3, pl. 12, fig. 35.
  Waverly Group: Licking County, Ohio.
- 1888. Palæoncilo sp. Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 2. Waverly Group: Cuyahoga Falls, Ohio.
- 1888. Palaconcilo sp. Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 16. Waverly Group: Cuyahoga Falls, Ohio.

# PALÆOPALÆMON Whitfield, 1880.

#### Palæopalæmon newberryi Whitfield.

- 1880. Paleopalemon Newberryi. Whitfield, Am. Jour. Scc. (3), p. 41. Erie Shale: Le Roy, Lake County, Ohio.
- 1888. Palæopalæmon Newberryi. Hall and Clarke, Pal. N. Y., vol. 7, p. 203, pl. 30, figs. 20-23.
  - Erie Shales: Leroy, Lake County, Ohio.
- 1891. Palwopalwmon Newberryi. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 571, pl. 12, figs. 19-21.

  Erie Shale: Ohios
- 1892. Palaopalamon newberryi. Whitfield, Am. Geol., vol. 9, p. 237.
  Kınderhook Group: Kaskade, 3 miles west of Burlington, Iowa.
- 1895. Palæopalæmon Newberryi. Whitfield, Gool. Surv. Ohio, vol. 7, p. 461, pl. 8, figs. 19-21.

Erie Shale: Ohio.

# PALÆOSOLEN Hall, 1885.

# Palæosolen occidentalis Miller and Gurley.

1896. Palæosolen occidentalis. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 16, pl. 2, figs. 13, 14.
Chouteau L. S.: Near Sedalia, Missouri.

# PALENARTHRUS Scudder, 1890.

# Palenarthrus impressus Scudder.

1890. Palenarthrus impressus. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 422, pl. 38, fig. 4.

Carboniferous: Mazon Creek, Illinois.

1890. Palenarthrus impressus. Scudder, Foss. Insc. N. A., vol. 1, p. 398, pl. 30, fig. 4. Carboniferous: Mazon Creek, Illinois.

# (PANOPÆA Menard, 1807.)

# Panopæa cooperi. See Chænomya cooperi.

# PAOLIA Smith, 1871.

# Paolia gurleyi Scudder.

1885. Paolia Gurleyi. Scudder, Proc. Am. Acad. Arts and Sci., vol. 20, p. 173. Carboniferous: Orange County, Indiana.

#### Paolia lacoana Scudder.

1885. Paolia Lacoana. Scudder, Proc. Am. Acad. Arts and Sci., vol. 20, p. 173. Carboniferous: Pittston, Pennsylvania.

# Paolia superba Scudder.

1885. Paolia superba. Scudder, Proc. Am. Acad. Arts and Sci., vol. 20, p. 173. Carboniferous: Mazon Creek, Illinois.

#### Paolia vetusta Smith.

1871. Paolia vetusta. Smith, Am. Jour. Sci. (3), vol. 1, p. 44, fig. Carboniferous: Near Paoli, Orange County, Indiana.

1885. Paolia vetusta. Scudder, Proc. Am. Acad. Arts and Sci., vol. 20, p. 173.
Carboniferous: Paoli. Indiana.

# PARALEGOCERAS Hyatt, 1883.

#### Paralegoceras iowense Meek and Worthen.

1860. Goniatites Iowensis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 471.
Coal Measures: Alpine, Iowa.

1866. Goniatites iowensis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 392, pl. 30, figs. 3a-c.

Coal Measures: Alpine, Iowa.

1883. Paralegoceras Iowense. Hyatt, Proc. Bost. Soc. Nat. Hist., vol. 22, p. 327.

1887. Goniatites? cf. G. iowensis. Herrick, Bull. Den. Univ., vol. 2, p. 146, pl. 14, fig. 11.

Coal Measures: Flint Ridge, Ohio.

1893. Paralegoceras iowense. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 474. Carboniferous: Near Bend, San Saba County, Texas.

1897. Paralegoceras iowense. Smith, Proc. Am. Phil. Soc., vol. 35, p. 53, pl. 19, figs. 1, 3.

Lower Coal Measures: Conway County, Arkansas.

# PARALOGUS Scudder, 1893.

### Paralogus æschnoides Scudder.

1893. Paralogus æschnoides. Scudder, Bull. U. S. Geol. Surv. No. 101, p. 21, pl. 1, figs. a, b.

Carboniferous: Silver Spring, East Providence, Rhode Island.

# PARARCA Hall, 1885.

#### Pararca erecta Hall.

1885. Pararca erecta. Hall, Pal. N. Y., vol. 5, pt. 1, p. 432, pl. 70, fig. 16; pl. 94, figs. 20, 21.

Waverly S. S.: Warren and Meadville, Pennsylvania.

#### Pararca neglecta Hall.

1885. Pararca neglecta. Hall, Pal. N. Y., vol. 5, pt. 1, p. 432, pl. 70, fig. 13. Waverly, S. S.: Meadville, Pennsylvania.

# PARISOCRINUS Wachsmuth and Springer, 1879.

# Parisocrinus intermedius Hall.

1858. Cyathocrinus intermedius. Hall, Geol. Iowa, vol. 1, pt. 2, p. 627, pl. 18, fig. 10. Keokuk L. S.: Warsaw, Illinois.

1894. Parisocrinus intermedius. Keyes, Mo. Geol. Surv., vol. 4, p. 207. Keokuk L. S.: Warsaw. Illinois.

# Parisocrinus perplexus Meek and Worthen.

1869. Poteriorinites ? perplexus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 138.

Lower Burlington L. S.: Burlington, Iowa.

1873. Poteriocrinites † perplexus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 405, pl. 2, fig. 12.
Burlington L. S.: Burlington, Iowa.

# Parisocrinus salignoides White.

1862. Poteriocrinus salignoides. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 10. Upper Burlington L. S.: Burlington, Iowa.

# Parisocrinus tenungachistis Meek and Worthen.

1861. Poteriocrinus Intuibrachiatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 138.

Burlington L. S.: Burlington, Iowa.

1868. Poteriocrinus tenuibrachiatus. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 484, pl. 16, fig. 1.

Burlington Group: Burlington, Iowa.

# PAROMYLACRIS Scudder, 1885.

# Paromylacris ampla Scudder.

1890. Paromylacris ampla. Scudder. Mem. Bost. Soc. Nat. Hist., vol. 4, p. 408, pl. 31, fig. 7.

Carboniferous: Mazon Creek, Illinois.

1890. Paromylacris ampla. Scudder, Foss. Insc. N. A., vol. 1, p. 384, pl. 23, fig. 7.

Carboniferous: Mazon Creek, Illinois.

1895. Paromylacris ampla. Soudder, Bull. U.S. Geol. Surv. No. 124, p.51, pl. 3, fig. 4.

Lower Coal Measures: Braidwood, Illinois.

# Paromylacris clintoniana Scudder.

1895. Paromylacris clintoniana. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 53, pl. 3, fig. 6.

Lower Coal Measures: Clinton, Missouri.

#### Paromylacris? pluteus Scudder.

1895. Paromylacris? pluteus. Soudder, Bull. U. S. Geol. Surv. No. 124, p. 54, pl. 3, fig. 2.

Coal Measures: Butter Mine, Pittston, Pennsylvania.

# Paromylacris rotunda Scudder.

1885. Paromylacris rotundum. Scudder, Proc. Acad. Nat. Sci. Phil., p. 25. Carboniferous: Mazon Creek, Illinois.

1890. Paromylaoris rotunda. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 406, pl. 32, figs. 1, 2.

Carboniferous: Mazon Creek, Illinois.

1890. Paromylacris rotunda. Soudder, Foss. Insc. N. A., vol. 1, p. 382, pl. 24, figs. 1, 2.

Carboniferous: Mazon Creek, Illinois.

1895. Paromylacris rotunda. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 51. Lower Coal Measures: Mazon Creek, Illinois.

# Paromylacris triangularis Scudder.

1895. Paromylacris triangularis. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 52, pl. 3, fig. 3.

Lower Coal Measures: Mazon Creek, Illinois.

# (PATELLA Linnaeus, 1758.)

# Patella levettei. See Lepetopsis levettei.

# (PECTEN Mueller, 1776.)

Pecten acutialatus. See Aviculopecten acutialatus.

Pecten armigerus. See Aviculopecten armigerus.

Pecten aviculatus. See Pernopecten aviculatus.

Pecten broadheadi. See Aviculopecten carboniferus.

Pecten carboniferus. See Aviculopecten carboniferus.

Pecten cleavelandicus. See Aviculopecten occidentalis.

Pecten coloradensis. See Aviculopecten coloradoensis.

Pecten halli. See Aviculopecten halli.

Pecten hawni. See Aviculopecten carboniferus.

Pecten missouriensis Shumard. See Aviculopecten missouriensis.

Pecten missouriensis Geinitz. See Aviculopecten occidentalis.

Pecten neglectus. See Euchondria neglecta.

Pecten occidentalis. See Aviculopecten occidentalis.

Pecten providencesis. See Aviculopecten providencesis.

Pecten ringens. See Aviculopecten ringens.

Pecten tenuilineatus. See Streblopteria tenuilineata.

Pecten utahensis. See Aviculopecten utahensis.

# (PENTAMERUS Sowerby, 1812.)

Pentamerus lenticularis. See Camarophorella lenticularis.

Pentamerus salinensis. See Conchidium salinensis.

# PENTREMITES Say, 1820.

Pentremites abbreviatus. See Pentremites godoni var. abbreviatus.

# Pentremites angularis Lyon.

1860. Pentremites angularis. Lyon, Trans. St. Louis Acad. Sci., vol. 1, p. 631, pl. 20, figs. 3a-c.

Millstone Grit: Falls of Rough Creek, Breckinridge County, Kentucky.

# Pentremites basilaris Hambach.

1880. Pentremites basilaris. Hambach, Trans. St. Louis Acad. Sci., vol. 4, p. 159, pl. B, fig. 9.

Kaskaskia L. S.: Evansville and Chester, Illinois.

### Pentremites bipuramidalis. See Metablastus bipuramidalis.

# Pentremites bradlevi Meek.

1873. Pentremites Bradleyi. Meek, U. S. Gool. Surv. Mont., Idaho, Wyo., and Utah. . p. 470.

Carboniferous: Divide between Ross Fork and Lincoln Valley, Montana.

### Pentremites broadheadi Hambach.

1880. Pentremites Broadheadi. Hambach, Trans. St. Louis Acad. Sci., vol. 4. p. 159, pl. B, fig. 6. Kaskaskia L. S.: Evansville, Illinois.

# Pentremites burlingtonensis Meek and Worthen.

1870. Pentremites Burlingtonensis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 33.

Upper Burlington L. S.: Burlington, Iowa.

1873. Pentremites Burlingtonensis. Meek and Worthen, Geol. Surv. Ill., vol. 5. p. 461, pl. 8, fig. 7.

Burlington L. S.: Burlington, Iowa.

#### Pentremites calycinus Lyon.

1860. Pentremites calycinus. Lyon, Trans. St. Louis Acad. Soc., vol. 1, p. 628, pl. 20, figs. 1a-c.

Millstone Grit: Near Eskridge's Ferry, Grayson County, Kentucky.

# Pentremites cervinus Hall.

1858. Pentremites cervinus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 690, pl. 25. figs. 11a, b.

Kaskaskia L. S.: Chester, Illinois; near Huntsville, Alabama.

#### Pentremites cherokeeus Hall.

1858. Pentremites cherokeeus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 691, pl. 25, figs. 12a. b.

Kaskaskia L. S.: Chester and Prairie du Long, Illinois; near Huntsville, Alabama; Cherokee County, Tennessee.

#### Pentremites chesterensis Hambach.

1880. Pentremites Chesterensis. Hambach, Trans. St. Louis Acad. Sci., vol. 4, p. 158, pl. B, fig. 8.

Kaskaskia L. S.: Randolph County and Chester, Illinois.

#### Pentremites clavatus Hambach.

1880. Pentremites clavatus. Hambach, Trans. St. Louis Acad. Sci., vol. 4, p. 157, pl. B. fig. 5.

Kaskaskia L. S.: Evansville, Illinois.

# Pentremites conoideus Hall.

1856. Pentremites conoideus. Hall, Trans. Albany Inst., vol. 4, p. 5. St. Louis L. S.: Spergen Hill and Bloomington, Indiana.

1858. Pentremites conoideus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 655, pl. 22, figs. 8-10.

Warsaw L. S.: Spergen Hill and Bloomington, Indiana.

#### Pentremites conoideus Hall—Continued.

- 1858. Pentremites conoideus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 243. Archimedes L. S.: Spergen Hill, Indiana.
- 1860. Pentremites conoideus. Hall, Supp., vol. 1, pt. 2, Geol. Rep. Ia., pl. 1, figs. 1a-d.
- 1881. Pentremites conoideus. White, 2d Ann. Rep. Dep. Stat. and Geol. Ind., p. 512, pl. 7, fig. 12.
  - Warsaw Group: Spergen Hill and Bloomington, Indiana.
- 1882. Pentremites conoideus. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 44, pl. 9, fig. 32.
  - St. Louis Group: Spergen Hill, Bloomington, Elletteville, and Paynter's Hill, Indiana; Alton, Illinois; Boonville, Missouri.
- 1883. Pentremites conoideus. Hall, 12th Rep. Geol. Surv. Ind., p. 323, pl. 32, fig. 32.
  St. Louis Group: Spergen Hill, Lanesville, and Bloomington, Indiana.
- 1886. Pentremites conoideus. Etheridge and Carpenter, Cat. Blast., p. 161, pl. 2, figs. 16-23; pl. 3, figs. 4-12; pl. 18, figs. 6-8.
  St. Louis Group: Spergen Hill, Indiana.
- 1894. Pentremites conoideus. Keyes, Mo. Geol. Surv., vol. 4, p. 134, pl. 18, fig. 5 Keokuk L. S.: Boonville, Missouri.

### Pentremites cornutus. See Heteroblastus cornutus.

#### Pentremites curtus. See Granatocrinus curtus.

# Pentremites decussatus Shumard.

1857. Pentremites decussatus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 242, pl. 9, figs. 6a, b.
Carboniferous: Button-mould Knob, south of Louisville, Kentucky.

#### Pentremites elegans Lyon.

- 1858. Pentremites elegans. Lyon, Trans. St. Louis Acad. Sci., vol. 1, p. 632, pl. 20, figs. 4a-c.
  - Millstone Grit: Near Grayson Springs and Litchfield, Kentucky.
- 1891. Pentremites elegans. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 577, pl. 13, fig. 4.
  Maxville L. S.: Newtonville, Ohio.
- 1895. Pentremites elegans. Whitfield, Geol. Surv. Ohio, vol. 7, p. 466, pl. 9, fig. 4.
  Maxville L. S.: Newtonville. Ohio.

# Pentremites elongatus Shumard.

- 1855. Pentremites elongatus. Shumard, Geol. Rep. Mo, p. 187, pl. B, fig. 4. Encrinital L. S.: Clarksville and near Columbia, Missouri.
- 1886. Pentremites elongatus. Etheridge and Carpenter, Cat. Blast., p. 161, pl. 1, figs. 4, 5; pl. 2, figs. 14, 15; pl. 18, fig. 4.
  Upper Burlington L. S.: Burlington, Iowa.
- 1894. Pentremites elongatus. Keyes, Mo. Geol. Surv., vol. 4, p. 133, pl. 18, fig. 4.
  Upper Burlington L. S.: Palmyra, Helton, Hannibal, Louisiana, Columbia,
  Rocheport, Ashgrove, and Ste. Genevieve, Missouri.

# Pentremites florealis. See Pentremites godoni.

# Pentremites gemmiformis Hambach.

1884. Pentremites gemmiformis. Hambach, Trans. St. Louis Acad. Sci., vol. 4, p. 553, pl. D, fig. 5.
Kaskaskia L. S.: Randolph County, Illinois.

# Pentremites globosus Troost.

- 1835. Pentremites globosa. Troost, Trans. Geol. Soc. Penn., vo. 1, pt. 2, p. 228. Mount Sano, Alabama; Crab Orchard Mountain, Tennessee; Illinois.
- 1858. Pentremites globosus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 695, pl. 25, fig. 17. Kaskaskia L. S.: Hardin County, Illinois.

# Pentremites godoni Defrance.

- \*1819. Encrina Godoni. Defrance, Dict. Sci. Nat., tome 14, p. 467.
- \*1820. Encrinites florealis. Von Schlotheim, Petrefactenkunde, Bd. 2, p. 38.
- 1825. Pentremites florealis. Say, Jour. Acad. Nat. Sci. Phil. (1), vol. 4, p. 295. Kentucky.
- 1835. Pentremites florealis. Troost, Trans. Geol. Soc. Penn., vol. 1, pt. 2, p. 229. pl. 10, fig. 3.
  - Jasper, Sequache Valley, between Sparta and Crab Orchard; rare in L. S. near Nashville, Tennessee; in several places on the base of the different spurs of the Cumberland Mountains, Kentucky, between Springfield and Nashville.
- 1848. Pentremites globosa. Christy, Letters on Geol., pl. 4, figs. 7, 8. Carboniferous L. S.: Huntsville, Alabama.
- 1854. Pentremites florealis. Shumard, Marcy's Expl. Red River of Louis., p. 174. Carboniferous: Washington and Crawford counties, Arkansas.
- 1858. Pentremites godoni. Hall, Geol. Iowa, vol. 1, pt. 2, p. 692, pl. 25, figs. 13a, b. Kaskaskia L. S.: Chester, Illinois; Huntsville, Alabama.
- 1881. Pentremites yodoni. White, 2d Ann. Rep. Dep. Stat. and Geol. Ind., p. 511, pl. 7, figs. 10, 11.
  - Chester Group: Dubois, Harrison, and Crawford counties, Indiana.
- 1886. Pentremites Godoni. Etheridge and Carpenter, Cat, Blast., p. 157, pl. 1, fig. 11; pl. 2, figs. 1-13; pl. 12, figs. 16, 17; pl. 16, figs. 19, 22, 23.
  Kaskaskia L. S.: Franklin County, Tennessee; Huntsville, Alabama; Ches-

ter, Illinois.

- Subcarboniferous: Floyd County, Georgia; Leipzig, Pope County, Illinois; Alleghany Mountains; Prairie du Long, Illinois.
- 1886. Pentremites Godoni var. florealis. Etheridge and Carpenter, Cat. Blast., p. 160, pl. 2, fig. 2.
  Chester Group: Huntsville, Alabama.
- 1894. Pentremites godoni. Keyes, Mo. Geol. Surv., vol. 4, p. 136. Kaskaskia L. S.: Ste. Mary, Missouri.
- 1896. Pentremites florealis. Harris, Bull. Am. Pal., vol. 1, No. 5, p. 353 (83). Kentucky, and Huntsville, Alabama.

# Pentremites godoni var. abbreviatus Hambach.

- 1880. Pentremites abbreviatus. Hambach, Trans. St. Louis Acad. Sci., vol. 4, p. 155, pl. 3, fig. 3.
  - Kaskaskia L. S.: Evansville, Illinois.
- 1886. Pentremites Godoni var. abbreviatus. Etheridge and Carpenter, Cat. Blast., p. 160, pl. 2, fig. 4.

Chester Group: Chester, Illinois.

Pentremites godoni var. florealis. See Pentremites godoni.

# Pentremites godona var. major Etheridge and Carpenter.

1886. Pentremites Godoni var. major. Etheridge and Carpenter, Cat. Blast., p. 160, pl. 2, fig. 1.

Kaskaskia L. S.: Franklin County, Tennessee.

Pentremites granulatus. See Granatocrinus granulatus.

Pentremites granulosus. See Schizoblastus granulosus.

Pentremites grosvenori. See Troostocrinus grosvenori.

# Pentremites hemisphericus Hambach.

1880. Pentremites hemisphericus. Hambach, Trans. St. Louis Acad. Sci., vol. 4, p. 157, pl. B, fig. 7.

Kaskaskia L. S.: Chester and Evansville, Illinois.

#### Pentremites koninckanus Hall.

1856. Pentremites koninckana. Hall, Trans. Albany Inst., vol. 4, p. 4.

St. Louis L. S.: Spergen Hill and Bloomington, Indiana; Alton, Illinois.

1858. Pentremites koninckana. Hall, Geol. Iowa, vol. 1, pt. 2, p. 656, pl. 22, figs. 11a-c.

Warsaw L. S.: Spergen Hill and Bloomington, Indiana; Alton, Illinois.

1860. Pentremites koninckiana. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., pl. 1, figs. 2a-c.

1882. Pentremites Koninckana. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 43, pl. 9, fig. 33.

St. Louis Group: Spergen Hill and Bloomington, Indiana; Alton, Illinois.

1883. Pentremites koninckana. Hall, 12th Rep. Geol. Surv. Ind., p. 322, pl. 32, fig. 33.

St. Louis Group: Spergen Hill, Lanesville, and Bloomington, Indiaua.

1894. Pentremites koninckanus. Keyes, Mo. Geol. Surv., vol. 4, p. 135.
St. Louis L. S.: St. Louis, Missouri; Pella and Oskaloosa, Iowa.

#### Pentremites laterniformis Owen and Shumard.

1850. Pentremites laterniformis. Owen and Shumard, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 66, pl. 7, fig. 15.

Carboniferous: Mill Creek, Randolph County, Illinois.

1852. Pentremites laterniformis. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 592, tab. 5A, fig. 15.

Carboniferous: Mill Creek, Randolph County, Illinois, about 7 miles from Chester

# Pentremites lineatus. See Metablastus lineatus.

#### Pentremites longicostalis Hall.

1860. Pentremites longicostalis. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 85. Warsaw L. S.: Warsaw, Illinois.

Pentremites melo. See Cryptoblastus melo.

Pentremites melo var. projectus. See Cryptoblastus projectus.

Pentremites missouriensis Swallow.

1860. Pentremites Missouriensis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 81.

Archimedes L. S.: Missouri and Illinois.

#### Pentremites nodosus Hambach.

1880. Pentremites nodosus. Hambach, Trans. St. Louis Acad. Sci., vol. 4, p. 155, pl. B, fig. 2.

Kaskaskia L. S.: Randolph County, Illinois.

Pentremites norwoodi. See Granatocrinus norwoodi.

#### Pentremites obesus Lyon.

1857. Pentremites obesus. Lyon, Rep. Ky. Geol. Surv., vol. 3, p. 469, pl. 2, figs. 1-1d.

Lower calcareous beds of Millstone Grit: Crittenden County, Kentucky.

1858. Pentremites obesus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 695, pl. 25, fig. 15. Kaskaskia L. S.: Southern Illinois and Kentucky.

1894. Pentremites obesus. Keyes, Mo. Geol. Surv., vol. 4, p. 135. Kaskaskia L. S.: Ste. Mary, Missouri.

Pentremites obliquatus. See Tricelocrinus obliquatus.

Pentremites potteri. See Schizoblastus potteri.

#### Pentremites pyriformis Say.

- 1825. Pentremite pyriformis. Say, Jour. Acad. Nat. Soi., Phil. (1), vol. 4, p. 294. Kentucky.
- 1835. Pentremites pyriformis. Troost, Trans. Geol. Soc. Penn., vol. 1, pt. 2, p. 228, pl. 10, fig. 8.

Near Sparta, Tennessee; Mount Sano, Alabama; Kentucky, between Springfield and Nashville, Tennessee.

1848. Pentremites pyriformis. Christy, Letters on Geol., pl. 4, fig. 6.

Carboniferous L. S.: Huntsville, Alabama.

- 1858. Pentremites pyriformis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 693, pl. 25, fig. 16.
  - Kaskaskia L. S.: Chester, Illinois; near Huntsville, Alabama.
- 1858. Pentremites symmetricus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 694, pl. 25, fig. 14.

Kaskaskia L. S.: Kentucky.

- 1881. Pentremites pyriformis. White, 2d Ann. Rep. Dept. Stat. and Geol. Ind., p. 511, pl. 7, fig. 9.
  Chester Group: Down Hill, Crawford County, Indiana.
- 1886. Pentrimites pyriformis. Etheridge and Carpenter, Cat. Blast., p. 167, pl. 1, figs. 6, 7; pl. 2, figs. 24-30; pl. 12, figs. 13-15; pl. 18, fig. 3.
  Chester Group: Chester and Prairie du Long, Illinois; Cumberland
- Chester Group: Chester and Prairie du Long, Illinois; Cumberla
  Mountains, Tennessee; Huntsville, Alabama; Alleghany Mountains.
- 1894. Pentremites pyriformis. Keyes, Mo. Geol. Surv., vol. 4, p. 135. Kaskaskia L. S.: Ste. Mary, Missouri.
- 1896. Pentremite pyriformis. Harris, Bull. Am. Pal., vol. 1, No. 5, p. 352 (82).

## Pentremites robustus Lyon.

1860. Pentremites robustus. Lyon, Trans. St. Louis Acad. Sci., vol. 1, p. 629, pl. 20, fig. 2a-c.

Millstone Grit: Grayson County, Kentucky.

Pentremites roemeri. See Schizoblastus ræmeri.

Pentremites sampsoni. See Schizoblastus sampsoni.

Pentremites sayi. See Schizoblastus sayi.

Pentremites sirius. See Orophocrinus sirius.

Pentremites stelliformis. See Orophocrinus stelliformis.

## Pentremites subconoideus Meek.

1873. Pentremites subconoideus. Meek, U.S. Geol. Surv. Mont., Idaho, Wyo., and Utah, p. 471.

Carboniferous: Divide between Ross Fork and Lincoln Valley, Montana.

## Pentremites subspinosus Hambach.

1880. Pentremites subspinosus. Hambach, Trans. St. Louis Acad. Sci., vol. 4, p. 154, pl. B, fig. 1.

Kaskaskıa L. S.: Chester, Illinois.

#### Pentremites sulcatus Roemer.

- \*1851. Pentatremites sulcatus. Roemer, Archiv. fur Naturgesch., Jahrg. 17, Bd. 1, p. 354, taf. 6, figs. 10a-c.
- 1854. Pentremites sulcatus. Shumard, Marcy's Expl. Red River of Louis., p. 174. Carboniferous: Washington County, Arkansas.
- 1886. Pentremites sulcatus. Etheridge and Carpenter, Cat. Blast., p. 165, pl. 1, figs. 8-10; pl. 2, fig. 31; pl. 16, fig. 20; pl. 18, fig. 5.

  Chester Group: Chester, Illinois.
- 1894. Pentremites sulcatus. Keyes, Mo. Geol. Surv., vol. 4, p. 135, pl. 18, figs. 6a, b. Kaskaskiä L. S.: Ste. Mary, Missouri.

Pentremites symmetricus. See Pentremites pyriformis.

Pentremites truncatus Conrad.

1843. Pentremites truncata. Conrad, Proc. Acad. Nat. Sci. Phil., p. 334. Edwardsville, Madison County, Illinois.

Pentremites varsouviensis. See Metablastus varsouviensis.

Pentremites woodmani. See Tricelocrinus woodmani.

Pentremites wortheni. See Metablastus wortheni.

Pentremites (species undetermined).

1868. Pentremites. Rogers, Geol. Rep. Penn., vol. 2, p. 833, fig. 688.

## PERIECHOCRINUS Austin, 1843.

#### Periechocrinus tenuidiscus Hall.

- \*1861. Actinocrinus (†) tenuidiscus. Hall, Desc. New Spec. Crin., p. 14. Burlington L. S.
- 1897. (?) Periechocrinus tenuidiscus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 531, pl. 46, fig. 4; pl. 51, fig. 6.
  Lower Burlington L. S.: Burlington, Iowa.

#### Periechocrinus whitei Hall.

- 1861. Actinocrinus (Megistocrinus) olliculus. Hall, Desc. New Spec. Crin., p. 2. Burlington L. S.
- 1861. Actinocrinus (Megistocrinas) Whitei. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 271.
  - Burlington L. S.: Burlington, Iowa.
- 1861. Actinocrinus (Paradocrinus?) amplus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 133.
  Burlington L. S.: Burlington, Iowa
- 1868. Actinocrinus (Saccocrinus!) amplus. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 470, pl. 16, fig. 2.
  Burlington Group: Burlington, Iowa.
- 1872. Actinocrinus (Megistocrinus) Whitei. Hall, Photo. Plates of Crinoids, pl. 4, figs. 4, 5. (Not fig. 6.)
- 1873. Megistocrinus (Saccocrinus) Whitei. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 397, pl. 6, fig. 1.
  Burlington L. S.: Burlington, Iowa.
- 1893. Periechocrinus whitei. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 27, pl. 2, fig. 29.
  Burlington L. S.: Burlington, Iowa.
- 1894. Periechocrinus? whitei. Keyes, Mo. Geol. Surv., vol. 4, p. 164. Lower Burlington L. S.: Hannibal, Missouri.
- 1897. (f) Periechocrinus Whitei. Wachsmuth and Springer, N. Am. Crin. Cam., p. 530, pl. 46, figs. 1-3; pl. 51, figs. 9, 10. Kinderhook Group: Le Grand, Marshall County, Iowa.

# Upper and Lower Burlington L. S.: Burlington, Iowa.

# PERISCHODOMUS McCoy, 1849.

#### Perischodomus illinoiensis Worthen and Miller.

- Perischodomus Illinoiensis. Worthen and Miller, Geol. Surv. Ill., vol. 7, p. 333, pl. 31, fig. 8.
  - Chester L. S.: Bay City, Pope County, Illinois.
- 1895. Perischodomus ? † illinoisensis. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 191. Kaskaskia L. S.: Bay City, Pope County, Illinois.

Bull. 153-27

# PERNOPECTEN Winchell, 1865.

## Pernopecten attenuatus Herrick.

1887. Entolium attenuatum. Herrick, Bull. Den. Univ., vol. 2, p. 24, pl. 1, fig. 11. Coal Measures: Flint Ridge, Ohio.

#### Pernopecten aviculatus Swallow.

- 1858. Pecten aviculatus. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 213. Coal Measures: Valley of Verdigris, Kansas.
- 1872. Entolium aviculatum. Meek, U. S. Geol. Surv. Nebr., p. 189, pl. 9, figs. 11a-f. Upper Coal Measures: Nebraska City, Bennett's Hill, Plattsmouth, and Rock Bluff, Nebraska; Iowa; Kansas. Coal Measures: Illinois.
- 1873. Entolium aviculatum. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 588, pl. 26, fig. 12.
- 1884. Entolium aviculatum. White, 13th Rep. Geol. Surv. Ind., p. 142, pl. 28, figs. 7, 8.
  - Coal Measures: Fountain, Vermilion, Vigo, Pike, Dubois, Perry, and Spencer counties, Indiana.
- 1887. Entolium aviculatum. Herrick, Bull. Den. Univ., vol. 2, p. 23, pl. 1, figs. 1, 2; pl. 3, fig. 10.
  Coal Measures: Flint Ridge, Ohio.
- 1888. Entolium aviculatum. Herrick, Bull. Den. Univ., vol. 4, pl. 10, figs. 5-7. Waverly Group: Cuyahoga Falls, Ohio.
- 1894. Entolium aviculatum. Keyes, Mo. Geol. Surv., vol. 5, p. 109, pl. 42, figs. 2a, b. Upper Coal Measures: Kansas City, Missouri.
- 1895. Entolium aviculatum. Herrick, Geol. Surv. Ohio, vol. 7, pl. 22, figs. 19, 21; pl. 24, fig. 6.
  Cuyahoga Shale: Moot's Run, Ohio.

#### Pernopecten circulus Shumard.

- 1850. Avicula circulus. Shumard, Geol. Surv. Mo., p. 206, pl. C, figs. 14a, b. Chouteau L. S.: Vandever's Falls, Cooper County, and in Moniteau County, Missouri.
- 1858. Avicula circulus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 522, pl. 7, fig. 9. Chemung Group: Burlington, Iowa.
- 1894. Entolium circulus. Keyes, Mo. Geol. Surv., vol. 5, p. 109. Chouteau L. S.: Vandever Falls, Missouri.

# Pernopecten cooperensis Shumard.

- 1855. Avicula Cooperensis. Shumard, Geol. Rep. Mo., p. 206, pl. C, fig. 15. Chouteau L. S.: Vandever's Falls, Cooper County, Missouri.
- 1870. Pernopecten? Cooperensis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 254.
  Waverly Group: Newark, Ohio.
- 1894. Entolium cooperensis. Keyes, Mo. Geol. Surv., vol. 5, p. 109. Chouteau L. S.: Vandever Falls, Missouri.

#### Pernopecten limaformis White and Whitfield.

- 1862. Aviculo-pecten limaformis. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 295.
  - Chemung Group: Burlington, Iows.
- 1865. Pernopecten limæformis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 126.
- 1884. Pernopecten limiformis. Hall, Rep. N. Y. State Geol. for 1881, pl. 1, figs. 1, 2.
  Burlington S. S.: Burlington, Iowa.

## Pernopecten limatus Winchell.

- 1865. Pernopecten limatus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 126. Base of Burlington L. S.: Burlington, Iowa.
- 1870. Pernopecten limatus? Winchell, Proc. Am. Phil. Soc., vol. 11, p. 255. Waverly Group: Newark and Sciotoville, Ohio.

## Pernopecten shumardanus Winchell.

- 1865. Pernopecten Shumardanus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 126.
- 1868. Pernopecten Shumardianus? Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 453, pl. 14, figs, 6a, b.

Kinderhook Group (colite bed): Burlington, Iowa

- 1875. Entolium Shumardianum? Meek, Pal. Ohio, vol. 2, p. 292, pl. 15, figs. 4a, b. Waverly Group: Richmond and Lodi, Ohio.
- 1884. Pernopecten Shumardanus. Hall, Rep. N. Y. State Geol. for 1881, pl. 1, fig. 3. Waverly Group: Newark, Ohio.
- 1888. Pernopecten shumardanus?? Herrick, Bull. Den. Univ., vol. 3, p. 57, pl. 12, figs. 13-15.

Waverly Group: Licking County, Ohio.

## PETRABLATTINA Scudder, 1876.

#### Petrablattina hastata Scudder.

1895. Petrablattina hastata. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 141, pl. 11, fig. 10.

Lower Permian: Cassville, West Virginia.

## Petrablattina sepulta Scudder.

- 1876. Blattina sepulta. Scudder, Proc. Am. Ass. Adv. Sci., vol. 24, p. 111, fig. 2. Carboniferous: Near Sydney, Cape Breton.
- \*1876. Blattina sepulta. Scudder, Can. Nat. (N. S.), vol. 8, p. 89, fig. 2. Carboniferous: Cape Breton, Nova Scotia.
- 1878. Blattina Sepulta. Dawson, Supp. to 2d ed. Acad. Geol., p. 53, fig. 7. Carboniferous: Nova Scotia.
- 1879. Petrablattina sepulta. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 125, pl. 6, fig. 7.
  Lower Carboniferous: Sydney, Cape Breton.
- 1890. Petrablattina sepulta. Scudder, Foss. Insc. N. A., vol. 1, p. 145, pl. 6, fig. 7. Carboniferous: Sydney, Cape Breton.
- 1895. Petrablattina sepulta. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 140. Lower Coal Measures: Sydney, Cape Breton Island.

#### PHACOCERAS Hyatt, 1883.

## Phacoceras dumbeli Hyatt.

1891. Phacoceras Dumbli. Hyatt, 2d Ann. Rept. Geol. Surv. Tex., p. 347, figs. 50, 51.

Carboniferous: Fort Riley, Kansas.

1893. Phacoceras Dumbeli. Hay, Trans. Kans. Acad. Sci., vol. 13, p. 45.
Permian: Fort Riley, Kansas.

#### PHÆNOSCHISMA Etheridge and Carpenter, 1882.

#### Phænoschisma kentuckyensis Shumard.

1858. Pentremites (Codaster?) Kentuckyensis. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 239, pl. 9, fig. 5.

Base of Carboniferous: "Button-mould Knob," south of Louisville, Kentucky.

## (PHÆTHONIDES Angelin, 1878.)

Phæthonides immaturus Herrick. See Brachymetopus immaturus. Phæthonides lodiensis Herrick. See Brachymetopus lodiensis.

# Phathonides occidentalis Herrick. See Brachymetopus occidentalis. Phathonides spinosus Herrick. See Brachymetopus spinosus.

## PHANEROTINUS Sowerby, 1844.

## Phanerotinus gyrocerus Roemer.

1852. Europhalus gyrocerus. Roemer, Kreid. von Texas, p. 91, Taf. 11, figs. 6a, b. Carboniferous?: San Saba Valley, 20 miles below the old Spanish Forts.

## Phanerotimus paradoxus Winchell.

- 1993. Phanerotiaus paradorus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 21.
  Yellow S. S.: Burlington, Iowa.
- 1879. Phanerotinus paradorus. Hall. Pal. N. Y., vol. 5, pt. 2, p. 60, pl. 16, fig. 16.
- 1994. Phanerotinus paradozus. Keyea, Mo. Geol. Surv., vol. 5. p. 164, pl. 52, fig. 7. Lower Burlington L. S.: Louisiana, Missouri.

#### Phanerotinus subplanus Hall.

1852. Euomphalus subplanus. Hall, Stansb. Exped. Gt. Salt Lake, p. 414, pl. 2, fign. 7a, b.

Carboniferous: Stansbury's Island, Great Salt Lake, Utah; and Big and Little Blue rivers.

# PHIALOCRINUS Trautschold, 1879.

## Phialogrinus angulatus Miller and Gurley.

1994. Meiocrinus angulatus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hint., p. 59, pl. 6, fig. 9.

Upper Coal Measures: Kansas City, Missouri.

#### Phialocrinus barydactylus Keyes.

1994. Phialocrinus barydactylus. Keyes, Mo. Geol. Surv., vol. 4, p. 220, pl. 28, fig. 1. Upper Coal Measures: Kansas City, Missouri.

#### Phialogrinus basilicus Miller and Gurley.

1990. Zelocrinus basilious. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 369, pl. 9, tigs. 4-6.

Upper Coal Measures: Kansas City, Missouri.

1894. Phialocrinus basiliscus. Keyes, Mo. Geol. Surv., vol. 4, p. 220. Upper Coal Measures: Kansas City, Missouri.

#### Phialocrinus carbonarius. See Graphiocrinus carbonarius.

#### Phialocrinus harii Miller and Gurley.

1890. Æsiocrisus karii. Miller and Gurley, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 16, pl. 3, fig. 1.

Upper Coal Measures: Kansas City, Missouri.

1890. *Moiocrinus karii*. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 338, pl. 3, fig. 1.

Upper Coal Measures: Kansas City, Missouri.

1890. Actiocrinus Harii. Anon, The Naturalist (Kansas City), vol. 4, No. 10, fig.

Upper Coal Measures: Kansas City, Missouri.

1894. Phialocrinus harii. Keyes, Mo. Geol. Surv., vol. 4, p. 219, pl. 29, fig. 1. Upper Coal Measures: Kansas City, Missouri.

## Phialocrinus lykinsi Butts.

1890. Assicrinus lykinni. Butts, The Naturalist (Kansas City), vol. 4, No. 10, fig. Upper Coal Measures: Kansas City, Missouri.

## Phialocrinus magnificus Miller and Gurley.

1890. Æsiocrinus magnificus. Miller and Gurley, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 15, pl. 2, figs. 1-5.

Upper Coal Measures: Kansas City, Missouri.

1890. Esiocrinus magnificus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 337, pl. 2, figs. 1-5.

Upper Coal Measures: Kansas City, Missouri.

1894. Phialocrinus magnificus. Keyes, Mo. Geol. Surv., vol. 4, p. 220, pl. 28, fig. 4. Upper Coal Measures: Kansas City, Missouri.

Phialocrinus stillativus. See Cyathocrinus stillativus.

## PHILLIPSIA Portlock, 1843.

Phillipsia auriculatus. See Proetus missouriensis.

Phillipsia bufo. See Griffithides bufo.

Phillipsia cliftonensis Shumard.

1858. Phillipsia Cliftonensis. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 227. Upper Coal Measures: Clifton Park, Kansas.

1887. Phillipsia cliftonensis. Herrick, Bull. Den. Univ., vol. 2, p. 61. Upper Coal Measures: Kansas.

1887. Phillipsia cliftonensis. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 84. Upper Coal Measures: Clifton Park, Kansas.

1897. Phillipsia cliftonensis. Smith, Proc. Am. Phil. Soc., vor. 35, p. 60, pl. 22, figs. 5a, b.

Upper Coal Measures: Poteau Mountain, Indian Territory.

#### Phillipsia consors Herrick.

1888. Phillipsia (f) consors. Herrick, Bull. Den. Univ., vol. 4, p. 53, pl. 1, figs. 16a-c. Waverly Group: Lodi, Ohio.

1889. Phillipsia (?) consors. Herrick, Am. Geol., vol. 3, pl. 1, fig. 16.

1891. Phillipsia (?) consors. Herrick, Bull. Geol. Soc. Am., vol. 2, p. 43. Waverly Group: Cuyahoga Falls, Ohio.

Phillipsia doris. See Proetus doris.

## Phillipsia howi Billings.

\*1863. Phillipsia howi. Billings, Can. Nat., vol. 8, p. 209, fig. Carboniferous: Kennetcook, Nova Scotia.

1868. Phillipsia Howi. Dawson, Acad. Geol., p. 313, fig. 133. Carboniferous L. S.: Kennetcook, Nova Scotia.

1887. Phillipsia howi. Herrick, Bull. Den. Univ., vol. 2, p. 63.
1887. Phillipsia howi. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 91. Lower Carboniferous: Kennetcook, Nova Scotia.

Phillipsia immaturus. See Brachymetopus immaturus.

## Phillipsia insignis Winchell.

1863. Phillipsia insignis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 24. Base of Burlington L. S.: Burlington, Iowa.

\*1863. Phillipsia insignis. Billings, Can. Nat., vol. 8, p. 209. Carboniferous: Nova Scotia.

1887. Phillipsia insignis. Herrick, Bull. Den. Univ., vol. 2, p. 63.

1887. Phillipsia insignis. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 87. Base of Burlington L. S.: Burlington, Iowa.

Phillipsia lodiensis. See Brachymetopus lodiensis.

## Phillipsia major Shumard.

- 1823. Trilobus. Say, Long's Exped. to Rocky Mts., vol. 1, p. 148 (footnote). Missouri River, 5 miles below Council Bluffs.
- 1858. Phillipsia major. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 226.
  Upper Coal Measures: Clinton County, Missouri; Valley of Verdigris, and
  12 miles south of Lecompton on the Santa Fé road. Kansas.
- 1872. Phillipsia major. Meek, U. S. Geol. Surv. Nebr., p. 238, pl. 3, figs. 2a-c. Upper Coal Measures: Bellevue and Plattsmouth, Nebraska; Clinton County, Missouri; Vermilion River, 12 miles south of Lecompton, Kansas.
- 1887. Phillipsia major. Herrick, Bull. Den. Univ., vol. 2, p. 60.
  Upper Coal Measures: Kansas.
- 1887. Phillipsia major. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 85, pl. 3, fig. 14.
  Upper Coal Measures: Clinton County, Missouri; Valley of the Verdigris
  River, 12 miles south of Lecompton on the Santa Fé road, Kansas;
  Kansas City, Missouri; Bellevue, Nebraska.
- \*1891. Phillipsia major. Hare, Kansas City Scientist, vol. 8, p. 33, pl. 1, figs. 5, 8e-c. Coal Measures: Kansas City, Missouri.
- 1894. Phillipsia major. Keyes, Mo. Geol. Surv., vol. 4, p. 238, pl. 32, figs. 8α-ε. Upper Coal Measures: Kansas City, Missouri.
- 1897. Trilobus. Harris, Bull. Am. Pal., vol. 1, p. 382 (112).

#### Phillipsia meramecensis Shumard.

- 1855. Phillipsia Meramecensis. Shumard, 1st and 2d Geol. Rep. Mo., p. 199, pl. B, fig. 9.
  - Archimedes L. S.: Fenton, St. Louis County, Missouri.
- 1863. Phillipsia Maramecensis 7 Winchell, Proc. Acad. Nat. Sci. Phil., p. 24. Yellow S. S.: Burlington, Iowa.
- 1887. Phillipsia meramecensis. Herrick, Bull. Den. Univ., vol. 2, p, 59. Archimedes L. S.: St. Louis County, Missouri.
- 1887. Phillipsia meramecensis. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 86, pl. 3, fig. 15.
  - Chester Series: Fenton, St. Louis County, Missouri.
- 1888. Phillipsia meramecensis. Herrick, Bull. Den. Univ., vol. 3, p. 28.

  Near top of Waverly Group: East of Rushville, Ohio.
- 1888. Phillipsia meramacensis. Herrick, Bull. Den. Univ., vol. 4, p. 54, pl. 1, fig. 6. Waverly Group: Ohio.
- 1889. Phillipsia meramecensis. Herrick, Am. Geol., vol. 3, pl. 1, fig. 6.
- 1891. Phillipsia meramecensis. Herrick, Bull. Geol. Soc. Am., vol. 2, p. 43, pl. 1, fig. 14.
  - Upper Waverly Group: Scioto County, Ohio.
- 1894. Phillipsia meramecensis. Keyes, Mo. Geol. Surv., vol. 4, p. 235.
  - Keokuk L. S.: St. Louis and Fenton, Missouri.
- 1895. Phillipsia meramecensis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 14, fig. 6.

#### Phillipsia missouriensis Shumard.

- 1858. Phillipsia Missouriensis. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 225.
  - Middle Coal Measures: Lexington, Missouri.
- 1870. Phillipsia Missouriensis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 259. Waverly Group: Newark, Ohio.
- 1887. Phillipsia missouriensis. Herrick, Bull. Den. Univ., vol. 2, p. 59.
- 1887. Phillipsia missouriensis. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 86, pl. 3, figs, 1, 2.
  - Middle Coal Measures: Lexington, Missouri.
- 1894. Phillipsia missouriensis. Keyes, Mo. Geol. Surv., vol. 4, p. 235. Coal Measures: Lexington, Missouri.

## Phillipsia nodocostatus Hare.

\*1891. Phillipsia nodocostatus. Hare, Kansas City Scientist, vol. 8, p. 33, pl. 1, figs. 1a-e, 7.

'Upper Coal Measures: Kansas City, Missouri.

Phillipsia ornatus. See Griffithides ornata.

Phillipsia portlocki. See Griffithides portlocki.

## Phillipsia perannulata Shumard.

1858. Phillipsia perannulata. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 296. White Permian L. S.: Guadalupe Mountains, New Mexico.

1859. Phillipsia perannulata. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 388, pl. 11, fig. 10.

White Permian L. S.: Guadalupe Mountains, New Mexico.

1887. Phillipeia perannulata. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 84. Carboniferous: Guadalupe Mountains, New Mexico.

#### Phillipsia præcursor Herrick.

1888. Phillipsia praecureor. Herrick, Bull. Den. Univ., vol. 3, p. 29, pl. 12, fig. 1. Waverly Group: Moot's Run, Ohio.

1888. Phillipsia (Proetus) pracursor. Herrick, Bull. Den. Univ., vol. 4, p. 54. pl. 1, figs. 1-3.
Waverly Group: 4 miles west of Granville, Ohio.

1889. Proetus (Phillipsia?) præcursor. Herrick, Am. Geol., vol. 3, pl. 1. figs. 1-3.

1891. Proëtus prœcursor. Herrick, Bull. Geol. Soc. Am., vol. 2, pl. 1, fig. 12. Waverly Group: Cuyahoga Falls, Ohio.

1895. Prætus præcursor. Herrick, Geol. Surv. Ohio, vol. 7, pl. 14, figs. 1-3; 16a. Cuyahoga Shale: Moot's Run and Lodi, Ohio.

#### Phillipsia rockfordensis Winchell.

1865. Phillipsia Rockfordensis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 133. Marshall Group: Rockford, Indiana.

1887. Phillipsia rockfordensis. Herrick, Bull. Den. Univ., vol. 2, p. 62.

1887. Phillipsia rockfordensis. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 91. Goniatite L. S.: Rockford, Indiana.

#### Phillipsia sampsoni Vogdes.

1888. Phillipsia sampsoni. Vogdes, Trans. N. Y. Acad. Sci., vol. 7, p. 248, 2 figs. Waverly Group: Sedalia, Missouri.

1894. Phillipsia sampsoni. Keyes, Mo. Geol. Surv., vol. 4, p. 235. Chouteau L. S.: Sedalia, Missouri.

Phillipsia sangamonensis. See Griffithides sangamonensis.

Phillipsia scitula. See Griffithides scitula.

Phillipsia sedaliensis. See Griffithides sedaliensis.

#### Phillipsia serraticaudata Herrick.

1888. Phillipsia serratioaudata. Herrick, Bull. Den. Univ., vol. 4, p. 52, pl. 1, figs. 8a-d.

Waverly Group: Richland County, Newark and Rushville, Ohio.

1889. Phillipsia serraticaudata. Herrick, Am. Geol., vol. 3, pl. 1, fig. 8 (11 ? ?).

1895. Phillipsia serraticaudata. Herrick, Geol. Surv. Ohio, vol. 7, pl. 14, figs. 8a-d. Upper Waverly Group: Newark, Ohio.

Phillipsia shumardi. See Proetus missouriensis.

Phillipsia swallovi. See Proetus swallovi.

Phillipsia tennesseensis Winchell. See Proetus tennesseensis.

## Phillipsia stevensoni Meek.

- \*1870. Phillipsia Sterensoni. Meek, 3d Ann. Rep. Board of Regents W. Va. Univ., p. 73.
  - Chester Series: Monongalia County, West Virginia.
- 1887. Phillipsia stevensoni. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 88, pl. 3, fig. 6. Chester Series: Monongalia County, West Virginia.

#### Phillipsia trinucleata Herrick.

- 1887. Phillipsia trinucleata. Herrick, Bull. Den. Univ., vol. 2, p. 64, pl. 1, fig. 23; pl. 2, fig. 32; pl. 3, fig. 21.
  - Coal Measures: Flint Ridge, Ohio.
- 1888. Proctus trinucleatus. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 81, pl. 2, figs. 7-9.

Waverly Group: Flint Ridge, Licking County, Ohio.

## Phillipsia tuberculata Meek and Worthen.

- 1870. Phillipsia tuberculata. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 52.
  Burlington L. S.: Kinderhook, Pike County, Illinois.
- 1887. Phillipsia tuberculata. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 92. Burlington Group: Kinderhook, Pike County, Illinois.
- 1894. Phillipsia tuberculata. Keyes, Mo. Geol. Surv., vol. 4, p. 235, pl. 32, fig. 6. Burlington L. S.: Sedalia, Missouri.

## Phillipsia vindobonensis Hartt.

- 1868. Phillipsia Vindobonensis. Hartt, Dawson's Acad. Geol., p. 313.
- Carboniferous L. S.: Nova Scotia.
- 1887. Phillipsia rindobonensis. Herrick, Bull. Den. Univ., vol. 2, p. 63.
- 1887. Phillipsia vindobonensis. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 89 Lower Carboniferous: Windsor, Nova Scotia.

#### Phillipsia (species undetermined).

- 1855. Phillipsia. Schiel, Pac. R. R. Rep., vol. 2, p. 109, pl. 1, figs. 11, 14. Carboniferous L. S: Near Westport and west of Indian Creek.
- 1858. Phillipsia. Species not determined. Swallow, Trans. St. Louis Acad. Sci, vol. 1, p. 181.
  - Lower Permian: Kansas.
- 1866. Phillipsia sp. Geinitz, Carb. und Dyas in Nebr., p. 1, tab. 1, fig. 1. Plattsmouth, Nebraska.
- 1872. Phillipsia sp. Meek, U. S. Geol. Surv. Nebr., p. 237, pl. 3, figs. 1a, b. Upper Coal Measures: Plattsmouth, Nebraska.
- 1876. Phillipsia —— t ——. White, Powell's Rep. Geol. Uinta Mts., p. 91.
  Lower Aubrey Group: Near Echo Park, Utah.
- 1888. Phillipsia? Herrick, Bull. Den. Univ., vol. 3, pl. 8, fig. 24.
- Waverly Group: Licking County, Ohio.

  1888. Phillipsia (sp. ?) Keyes, Proc. Acad. Nat. Sci. Phil., p. 243.
  - Lower Coal Measures: Des Moines, Iowa.
  - 1897. Phillipsia sp. Smith, Proc. Am. Phil. Soc., vol. 35, p. 61. Lower Coal Measures: Johnson County, Arkansas.
  - 1897. Phillipsia sp. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 272, pl. 20, fig. 11. Batesville S. S.: Batesville, Arkansas.

# (PHILOCRINUS DeKoninck, 1863.)

Philocrinus pelvis. See Erisocrinus typus.

## PHOLADELLA Hall, 1870.

Pholadella cuneata. See Promacrus cuneatus.

#### Pholadella newberryi Hall.

\*1870. Pholadella Newborryi. Hall, Prelim. Not. Lamell., 2, p. 65. Waverly S. S.: Licking County, Ohio.

1884. Pholadella Newberryi. Hall, Rep. N. Y. State Geol. for 1881, pl. 11, fig. 22. Waverly S. S.: Licking County, Ohio.

1885. Pholadella Newberryi. Hall, Pal. N. Y., vol. 5, pt. 1, p. 471, pl. 78, fig. 25. Waverly Group: Licking County, Ohio.

1888. Pholadella newberryi. Herrick, Bull. Den. Univ., vol. 3, p. 85, pl. 3, fig. 27; pl. 4, fig. 4.

Waverly Group: Licking County, Ohio.

1891. Pholadella Newberryi. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 609.

1895. Pholadella Newberryi. Whitfield, Geol. Surv. Ohio, vol. 7, p. 494.

## (PHOLADOMYA Sowerby, 1823.)

## Pholadomya elongata. See Allorisma elongatum.

# PHOLIDOCIDARIS Meek and Worthen, 1869.

## Pholidocidaris irregularis Meek and Worthen.

1869. Lepidocentrus irregularis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 78.

Keokuk L. S.: Hamilton and near Nauvoo, Illinois.

1873. Pholidocidaris irregularis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 512, pl. 15, fig. 9.

Keokuk Group: Hamilton and near Nauvoo, Illinois.

1874. Pholidocidaris irregularis. Meek, Am. Jour. Sci. (3), vol. 7, p. 375.

1895. Pholidocidaris irregularis. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 180. Keokuk L. S.: Hamilton and near Nauvoo, Illinois.

#### Pholidocidaris meeki Jackson.

1896. Philidocidaris meeki. Jackson, Bull. Geol. Soc. Am., vol. 7, p. 210, pl. 9, fig. 54.

Keokuk Group: Warsaw, Illinois.

## PHOLIDOPS Hall, 1859

## Pholidops (species undetermined).

1892. Pholidops compare P. Hamiltoniæ. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 4 I, fig. 37.

Bedford Shales: Bedford, Ohio.

# PHRAGMOCERAS Broderip, 1839.

## Phragmoceras expansum Winchell.

1863. Phragmoceras expansum. Winchell, Proc. Acad. Nat. Sci. Phil., p. 23. Yellow S. S.: Burlington, Iowa.

## Phragmoceras missouriense Miller.

1891. Phragmoceras missouriense. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 89, pl. 15, fig. 2.

Chouteau L. S.: Pettis County, Missouri.

1892. Phragmocerae missouriense. Miller, 17th Rep. Geol. Surv. Ind., p. 699, pl. 15, fig. 2.

Chouteau L. S.: Pettis County, Missouri.

1894. Phragmoceras missouriensis. Keyes, Mo. Geol. Surv., vol. 5, p. 220. Chouteau L. S.: Sedalia, Missouri.

# PHRAGMODICTYA Hall, 1884.

## Phragmodictya catilliformis Whitfield.

1881. Dictyophyton catilliforms. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 18, pl. 3, fig. 1.

Keokuk Group: Crawfordsville, Indiana.

1884. Phragmodictya catilliformis. Hall, 35th Rep. N.Y. State Mus. Nat. Hist., p. 477, pl. 18, figs. 12-14; pl. 20, figs. 2, 3; pl. 21, figs. 1-6. Keokuk Group: Crawfordsville, Indiana.

## Phragmodictya lineata Hall.

1884. Phragmodictya lineata. Hall, 35th Rep. N. Y. State Mus. Nat. Hist., p. 478, pl. 21, fig. 8.

Keokuk Group: Crawfordsville, Indiana.

## Phragmodictya patelliformis Hall.

1884. Phragmodictya patelliformis. Hall, 35th Rep. N. Y. State Mus. Nat. Hist., p. 478.

Keokuk Group: Crawfordsville, Indiana.

## PHTHANOCORIS Scudder, 1884.

#### Phthanocoris occidentalis Scudder.

1883. Phthanocoris occidentalis. Scudder, Proc. Bost. Soc. Nat. Hist., vol. 22, p. 59.

Coal Measures: Kansas City, Missouri.

1885. Phthanocoris occidentalis. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 348, pl. 32, fig. 4.

Coal Measures: Kansas City, Missouri.

1890. Phthanocoris occidentalis. Scudder, Foss. Insc. N. A., vol. 1, p. 312, pl. 18, fig. 4.

Coal Measures: Kansas City, Missouri.

## PHYSA Dapernaud, 1801.

#### Physa prisca Walcott.

1883. Physa prisca. Walcott, Science, vol. 2, p. 808, fig. 2.

Base of Carboniferous: Eureka District, Nevada.

1884. Physa prisca. Walcott, Pal. Eureka Dist., p. 262, fig. 6.

Lower Carboniferous: Eureka District, Nevada.

## PHYSETOCRINUS Meek and Worthen, 1869.

## Physetocrinus asper Meek and Worthen.

1869. Strotocrinus (Physetocrinus?) asper. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 161.

Upper Burlington L. S.: Burlington, Iowa.

1873. Strotocrinus (Physetocrinus?) asper. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 351, pl. 7, fig. 1.

Burlington L. S.: Burlington, Iowa.

1897. Physetocrinus asper. Wachsmuth and Springer, N. Am. Crin. Cam., p. 596, pl. 63, figs. 7a, b.
Upper Burlington L. S.: Burlington, Iowa.

## Physetocrinus copei Miller.

1881. Actinocrinus copei. Miller, Jour. Cinu. Soc. Nat. Hist., vol. 4, p. 310. Subcarboniferous: Lake Valley Mining District, New Mexico.

1897. Physetocrinus Copei. Wachsmuth and Springer, N. Am. Crin. Cam., p. 598, pl. 63, fig. 5.

Lower Burlington L. S.: Lake Valley, New Mexico.

## Physetocrinus dilatatus Meek and Worthen.

- 1869. Strotocrinus (Physetocrinus) dilatatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 162.
  - Lower Burlington L. S.: Burlington, Iowa.
- 1873. Strotocrinus (Physetocrinus) dilatatus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 363, pl. 10, fig. 6.

Burlington L. S.: Burlington, Iowa.

1897. Physetocrinus dilatatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 595, pl. 64, figs. 9, 10.
Upper Burlington L. S.: Burlington, Iowa.

## Physetocrinus lobatus Wachsmuth and Springer.

1897. Physetocrinus lobatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 599, pl. 63, figs. 8a, b.

Lower Burlington L. S.: Lake Valley, New Mexico.

## Physetocrinus ornatus Hall.

- 1858. Actinocrinus ornatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 583, pl. 10, fig. 12. Burlington L. S.: Burlington, Iowa.
- 1860. Actinocrinus senarius. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, p. 25. Burlington L. S.: Burlington, Iowa.
- 1892. Actinocrinus brittei. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 36, pl. 6, figs. 1-4.
  Burlington Group: Sedalia, Missouri.
- 1894. Actinocrinus brittsi. Miller, 18th Rep. Geol. Surv. Ind., p. 290, pl. 6, figs. 1-4.
  Burlington Group: Sedalia, Missouri.
- 1894. Actinocrinue brittei. Keyes, Mo. Geol. Surv., vol. 4, p. 188. Burlington L. S.: Sedalia, Missouri.
- 1894. Physetocrinus ornatus. Keyes, Mo. Geol. Surv., vol. 4, p. 192, pl. 24, fig. 7.

  Lower Burlington L. S.: Hannibal, Louisiana, and Sedalia, Missouri.
- 1897. Physetocrinus ornatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 597, pl. 63, figs. 1-4.
  Lower Burlington L. S.: Burlington, Iowa.

#### Physetocrinus sampsoni Miller and Gurley.

1896. Physetocrinus sampsoni. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 14, pl. 1, figs. 5-7. Burlington Group: Sedalia, Missouri.

#### Physetocrinus ventricosus Hall.

- 1858. Actinocrinus ventricosus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 595, pl. 11, figs. 6a, b.
  - Burlington L. S.: Burlington, Iowa.
- 1860. Actinocrinus subventricosus. McChesney, Desc. New Pal. Foss., p. 21. Burlington L. S.: Burlington, Iowa.
- 1860. Actinocrinus ventricosus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, pl. 2, fig. 5.
- 1861. Actinocrinus ventricosus var. cancellatus. Hall, Desc. New Spec. Crin., p. 3. Burlington L. S.
- 1861. Actinocrinus ventricosus var. internodius. Hall, Desc. New Spec. Crin., p. 3. Burlington L. S.
- 1861. Actinocrinus ventricosus var. internodius. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 278.
  - Burlington L. S.: Burlington, Iowa.
- 1861. Actinocrinus rentricosus var. reticulatus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 279.
- 1865. Actinocrinus subventricosus. McChesney, Ill. New Spec. Foss., pl. 4, figs. 6a-b.

#### Physetocrinus ventricosus Hall—Continued.

1868. Actinocrinus subventricosus. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 16, pl. 4, figs. 6a, b.

Burlington L. S.: Burlington, Iowa.

1894. Physetocrinus ventricosus. Keyes, Mo. Geol. Surv., vol. 4, p. 192. Upper Burlington L. S.: Hannibal and Sedalia, Missouri.

1897. Physetocrinus ventricosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 593, pl. 63, fig. 6; pl. 64, figs. 1-7, 8a, b.

Upper and Lower Burlington L. S.: Burlington, Iowa; Missouri.

# PHYSOSPONGIA Hall, 1884.

# Physospongia alternata Hall.

1884. Physospongia alternata. Hall, 35th Rep., N. Y. State Mus. Nat. Hist., p. 481, pl. 20, fig. 9.

Keokuk Group: Crawfordsville, Indiana.

## Physospongia colletti Hall.

1884. Physospongia Colletti. Hall, 35th Rep. N. Y. State Mus. Nat. Hist., p. 480, pl. 20, fig. 7.

Keokuk Group: Crawfordsville, Indiana.

#### Physospongia dawsoni Whitfield.

1881. Uphantaenia Dawsoni. Whitfield, Am. Jour. Sci. (3), vol. 22, p. 132. Keokuk Group: Crawfordsville, Indiana.

1881. Uphantænia Dawsoni. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 16, pl. 4, figs. 1, 2.

Keokuk Group: Crawfordsville, Indiana.

1884. Physospongia Dawsoni. Hall, 35th Rep., N. Y. State Mus. Nat. Hist., p. 479, pl. 20, figs. 4-6, 8.

Keokuk Group: Crawfordsville, Indiana.

#### (PILEOPSIS Lamark, 1812.)

## Pileopsis pabulocrinus. See Igoceras pabulocrinus.

#### PINNA Linnaeus, 1758.

## Pinna adamsi. See Pinna peracuta.

## Pinna arkansana Weller.

1897. Pinna arkansana. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 260, pl. 19, figs. 1, 2.

Batesville S. S.: Batesville, Arkansas.

#### Pinna consimilis Walcott.

. 1884. Pinna consimilis. Walcott, Pal. Eureka Dist., p. 236, pl. 20, fig. 13.

Lower Carboniferous: Eureka District and White Pine District, Nevada.

#### Pinna hinrichsana White and St. John.

1868. Pinna Hinrichsiana. White and St. John, Trans. Chicago Acad. Sci., vol. 1, p. 122, fig. 7.

St. Louis L. S.: Near Pella, Iowa.

#### Pinna inexpectans Walcott.

1884. Pinna inexpectans. Walcott, Pal. Eureka District, p. 235, pl. 19, fig. 11. Lower Carboniferous: Eureka District, Nevada.

#### Pinna ludlovi Whitfield.

1876. Pinna Ludlovi. Whitfield, Ludlow's Reconn. Carroll, Mont., to Yell. Nat. Park, p. 143, pl. 1, figs. 6, 7.

Coal Measure L. S.: Canyon of Musselshell, Montana.

#### Pinna marshallensis Winchell.

1865. Pinna † Marshallensis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 126. Marshall Group: Napoleon Cut, Jackson County, Michigan.

#### Pinna maxvillensis Whitfield.

- 1882. Pinna Maxvillensis. Whitfield, Ann. N. Y. Acad. Sci., vol. 2, p. 221.

  Maxville L. S.: Maxville, Ohio.
- 1891. Pinna Maxvillensis. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 586, pl. 14, fig. 5.
  Maxville L. S.: Maxville, Ohio.
- 1895. Pinna Maxvillensis. Whitfield, Geol. Surv. Ohio, vol. 7, p. 474, pl. 10, fig. 5. Maxville L. S.: Maxville, Ohio.

#### Pinna missouriensis Swallow.

- 1863. Pinna Missouriensis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 97. Ste. Genevieve L. S.: Missouri and Illinois.
- 1894. Pinna missouriensis. Keyes, Mo. Geol. Surv., vol. 5, p. 116. St. Louis L. S.: Ste. Genevieve, Missouri.

#### Pinna peracuta Shumard.

- 1858. Pinna peracuta. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 214. Upper Coal Measures: Iowa Point, Nebraska; Kansas.
- 1860. Pinna adamsi. McChesney, Desc. New Pal. Foss., p. 74.
  Coal Measures: Lasalle, Illinois.
- 1872. Pinna peracuta. Meek, U. S. Geol. Surv. Nebr., p. 198, pl. 6, figs. 11a, b. Upper Coal Measures: Bennett's Mill, Wyoming; Nebraska City, Plattsmouth, Rock Bluff, and Bellevue, Nebraska. Coal Measures: Iowa, Nebraska, Kansas, Missouri, and Illinois.
- 1877. Pinna peracuta (?) White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 151, pl. 11, fig. 5a.
- Carboniferous: Near Relief Spring, Arizona.

  1884. Pinna peracuta. White, 13th Rep. Geol. Surv. Ind., p. 145, pl. 28, figs. 1, 2.

  Upper, Middle, and Lower Coal Measures: Indiana.
- 1886. Pinna peracuta. Heilprin, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 272, fig. 12; p. 273, fig. 12a.
  - Mill Creek L. S. Upper Coal Measures: Wilkesbarre, Pennsylvania.
- 1886. Pinna peracuta. Heilprin, 2d Geol. Surv. Penn., Ann. Rep. 1885, p. 455, p. 444, fig. 12; p. 454, fig. 12a.
  Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.
- 1894. Pinna peracuta. Keyes, Mo. Geol. Surv., vol. 5, p. 116, pl. 45, figs. 2a, b. Upper Coal Measures: Kansas City, Missouri.

#### Pinna sancti-ludovici Worthen.

- 1883. Pinna St. Ludovici. Worthen, Geol. Surv. Ill., vol. 7, p. 326.
  St. Louis L. S.: Monroe County, Illinois.
- 1890. Pinna sancti-ludovici. Worthen, Geol. Surv. Ill., vol. 8, p. 111, pl. 19, fig. 6. St. Louis L. S.: Monroe County, Illinois.

# Pinna subspatulata Worthen.

1875. Pinna subspatulata. Worthen, Geol. Surv. Ill., vol. 6, p. 524, pl. 30, fig. 4. Keokuk L. S.: Keokuk, Iowa; Warsaw, Illinois. Warsaw beds: Warsaw, Illinois.

## PINNATOPORA Vine, 1883.

#### Pinnatopora bellula Ulrich.

1830. Pinnatopora bellula. Ulrich, Geol. Surv. Ill., vol. 8, p. 619, pl. 66, figs. 8-8b. Base of Coal Measures: Seville, Illinois.

Phæthonides occidentalis Herrick. See Brachymetopus occidentalis. Phæthonides spinosus Herrick. See Brachymetopus spinosus.

## PHANEROTINUS Sowerby, 1844.

## Phanerotinus gyroceras Roemer.

1852. Euomphalus gyroceras. Roemer, Kreid. von Texas, p. 91, Taf. 11, figs. 6a, b. Carboniferous ?: San Saba Valley, 20 miles below the old Spanish Forts.

## Phanerotinus paradoxus Winchell.

- 1863. Phanerotinus paradoxus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 21. Yellow S. S.: Burlington, Iowa.
- 1879. Phanerotinus paradoxus. Hall, Pal. N. Y., vol. 5, pt. 2, p. 60, pl. 16, fig. 16. 1894. Phanerotinus paradoxus. Keyes, Mo. Geol. Surv., vol. 5, p. 164, pl. 52, fig. 7. Lower Burlington L. S.: Louisiana, Missouri.

## Phanerotinus subplanus Hall.

1852. Euomphalus subplanus. Hall, Stansb. Exped. Gt. Salt Lake, p. 414, pl. 2, figs. 7a. b.

Carboniferous: Stansbury's Island, Great Salt Lake, Utah; and Big and Little Blue rivers.

# PHIALOCRINUS Trautschold, 1879.

# Phialocrinus angulatus Miller and Gurley.

1894. Æsiocrinus angulatus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 59, pl. 6, fig. 9.

Upper Coal Measures: Kansas City, Missouri.

#### Phialocrinus barydactylus Keyes.

1894. Phialocrinus barydactylus. Keyes, Mo. Geol. Surv., vol. 4, p. 220, pl. 28, fig. 1. Upper Coal Measures: Kansas City, Missouri.

#### Phialocrinus basilicus Miller and Gurley.

1890. Æsiocrinus basilious. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 369, pl. 9, figs. 4-6.

Upper Coal Measures: Kansas City, Missouri.

1894. Phialocrinus basiliscus. Keyes, Mo. Geol. Surv., vol. 4, p. 220. Upper Coal Measures: Kansas City, Missouri.

#### Phialocrinus carbonarius. See Graphiocrinus carbonarius.

#### Phialocrinus harii Miller and Gurley.

1890. Æsiocrinus harii. Miller and Gurley, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 16, pl. 3, fig. 1.

Upper Coal Measures: Kansas City, Missouri.

1890. Æsiocrinus harii. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 338, pl. 3, fig. 1.

Upper Coal Measures: Kansas City, Missouri.

1890. Assiocrinus Harii. Anon, The Naturalist (Kansas City), vol. 4, No. 10,

Upper Coal Measures: Kansas City, Missouri. 1894. Phialocrinus harii. Keyes, Mo. Geol. Surv., vol. 4, p. 219, pl. 29, fig. 1.

Upper Coal Measures: Kansas City, Missouri.

## Phialocrinus lykinsi Butts.

1890. Assiocrinus lykinsi. Butts, The Naturalist (Kansas City), vol. 4, No. 10, fig. Upper Coal Measures: Kansas City, Missouri.

## Phialocrinus magnificus Miller and Gurley.

1890. Æsiocrinus magnificus. Miller and Gurley, Jour. Cinn. Soc. Nat. Hist vol. 13, p. 15, pl. 2, figs. 1-5.

Upper Coal Measures: Kansas City, Missouri.

1890. Estocrinus magnificus. Miller and Gurley, 16th Rep. Geol. Surv. Ind p. 337, pl. 2, figs. 1-5.

Upper Coal Measures: Kansas City, Missouri.

1894. Phialocrinus magnificus. Keyes, Mo. Geol. Surv., vol. 4, p. 220, pl. 28, fig. 4. Upper Coal Measures: Kansas City, Missouri.

Phialocrinus stillativus. See Cyathocrinus stillativus.

## PHILLIPSIA Portlock, 1843.

Phillipsia auriculatus. See Proetus missouriensis.

Phillipsia bufo. See Griffithides bufo.

Phillipsia cliftonensis Shumard.

1858. Phillipsia Cliftonensis. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 227. Upper Coal Measures: Clifton Park, Kansas.

1887: Phillipsia cliftonensis. Herrick, Bull. Den. Univ., vol. 2, p. 61. Upper Coal Measures: Kansas.

1887. Phillipsia cliftonensis. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 84. Upper Coal Measures: Clifton Park, Kansas.

1897. Phillipsia cliftonensis. Smith, Proc. Am. Phil. Soc., von. 35, p. 60, pl. 2 figs. 5a, b.

Upper Coal Measures: Poteau Mountain, Indian Territory.

#### Phillipsia consors Herrick.

1888. Phillipsia (7) consors. Herrick, Bull. Den. Univ., vol. 4, p. 53, pl. : figs. 16a-c.

Waverly Group: Lodi, Ohio.

1889. Phillipsia (f) consors. Herrick, Am. Geol., vol. 3, pl. 1, fig. 16.

1891. Phillipsia (f) consors. Herrick, Bull. Geol. Soc. Am., vol. 2, p. 43. Waverly Group: Cuyahoga Falls, Ohio.

Phillipsia doris. See Proetus doris.

#### Phillipsia howi Billings.

\*1863. Phillipsia howi. Billings, Can. Nat., vol. 8, p. 209, fig. Carboniferous: Kennetcook, Nova Scotia.

1868. Phillipsia Howi. Dawson, Acad. Geol., p. 313, fig. 133. Carboniferous L. S.: Kennetcook, Nova Scotia.

1887. Phillipsia howi. Herrick, Bull. Den. Univ., vol. 2, p. 63.

1887. Phillipsia howi. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 91. Lower Carboniferous: Kennetcook, Nova Scotia.

Phillipsia immaturus. See Brachymetopus immaturus.

#### Phillipsia insignis Winchell.

1863. Phillipsia insignis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 24. Base of Burlington L. S.: Burlington, Iowa.

\*1863. Phillipsia ineignis. Billings, Can. Nat., vol. 8, p. 209. Carboniferous: Nova Scotia.

1887. Phillipsia insignis. Herrick, Bull. Den. Univ., vol. 2, p. 63.

1887. Phillipsia insignis. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 87.
Base of Burlington L. S.: Burlington, Iowa.

Phillipsia lodiensis. See Brachymetopus lodiensis.

#### Phillipsia major Shumard.

- 1823. Trilobus. Say, Long's Exped. to Rocky Mts., vol. 1, p. 148 (footnote). Missouri River, 5 miles below Council Bluffs.
- 1858. Phillipsia major. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 226. Upper Coal Measures: Clinton County, Missouri; Valley of Verdigris, and 12 miles south of Lecompton on the Santa Fé road, Kansas.
- 1872. Phillipsia major. Meek, U. S. Geol. Surv. Nebr., p. 238, pl. 3, figs. 2a-c.

  Upper Coal Measures: Bellevue and Plattsmouth, Nebraska; Clinton
  County Missonsis Vermillon Piver 12 miles south of Lecompton Konese.
- County, Missouri; Vermilion River, 12 miles south of Lecompton, Kansas. 1887. Phillipsia major. Herrick, Bull. Den. Univ., vol. 2, p. 60.
- 1887. Phillipsia major. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 85, pl. 3, fig. 14... Upper Coal Measures: Clinton County, Missouri; Valley of the Verdigris River, 12 miles south of Lecompton on the Santa Fé road, Kansas; Kansas City, Missouri; Bellevue, Nebraska.
- \*1891. Phillipsia major. Hare, Kansas City Scientist, vol. 8, p. 33, pl. 1, figs. 5, 8a-c. Coal Measures: Kansas City, Missouri.
- 1894. Phillipsia major. Keyes, Mo. Geol. Surv., vol. 4, p. 238, pl. 32, figs. 8a-e. Upper Coal Measures: Kansas City, Missouri.
- 1897. Trilobus. Harris, Bull. Am. Pal., vol. 1, p. 382 (112).

Upper Coal Measures: Kansas.

# Phillipsia meramecensis Shumard.

- 1855. Phillipsia Meramecensis. Shumard, 1st and 2d Geol. Rep. Mo., p. 199, pl. B, fig. 9.
  - Archimedes L. S.: Fenton, St. Louis County, Missouri.
- 1863. Phillipsia Maramecensis? Winchell, Proc. Acad. Nat. Sci. Phil., p. 24. Yellow S. S.: Burlington, Iowa.
- 1887. Phillipsia meramecensis. Herrick, Bull. Den. Univ., vol. 2, p. 59.

  Archimedes L. S.: St. Louis County, Missouri.
- 1887. Phillipsia meramecensis. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 86, pl. 3, fig. 15.
  - Chester Series: Fenton, St. Louis County, Missouri.
- 1888. Phillipsia meramecensis. Herrick, Bull. Den. Univ., vol. 3, p. 28. Near top of Waverly Group: East of Rushville, Ohio.
- 1888. Phillipsia meramacensis. Herrick, Bull. Den. Univ., vol. 4, p. 54, pl. 1, fig. 6. Waverly Group: Ohio.
- 1889. Phillipsia meramecensis. Herrick, Am. Geol., vol. 3, pl. 1, fig. 6.
- 1891. Phillipsia meramecensis. Herrick, Bull. Geol. Soc. Am., vol. 2, p. 43, pl. 1, fig. 14.
- Upper Waverly Group: Scioto County, Ohio.
- 1894. Phillipsia meramecensis. Keyes, Mo. Geol. Surv., vol. 4, p. 235.
- Keokuk L. S.: St. Louis and Fenton, Missouri.
- 1895. Phillipsia meramecensis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 14, fig. 6.

#### Phillipsia missouriensis Shumard.

- 1858. Phillipsia Missouriensis. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 225.
  - Middle Coal Measures: Lexington, Missouri.
- 1870. Phillipsia Missouriensis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 259.
  - Waverly Group: Newark, Ohio.
- 1887. Phillipsia missouriensis. Herrick, Bull. Den. Univ., vol. 2, p. 59.
- 1887. Phillipsia missouriensis. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 86, pl. 3, figs, 1, 2.
  - Middle Coal Measures: Lexington, Missouri.
- 1894. Phillipsia missouriensis. Keyes, Mo. Geol. Surv., vol. 4, p. 235. Coal Measures: Lexington, Missouri.

#### Phillipsia nodocostatus Hare.

\*1891. Phillipsia nodocostatus. Hare, Kansas City Scientist, vol. 8, p. 33, pl. 1, figs. 1a-e. 7.

'Upper Coal Measures: Kansas City, Missouri.

Phillipsia ornatus. See Griffithides ornata.

Phillipsia portlocki. See Griffithides portlocki.

#### Phillipsia perannulata Shumard.

1858. Phillipsia perannulata. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 296. White Permian L. S.: Guadalupe Mountains, New Mexico.

1859. Phillipsia perannulata. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 388. pl. 11, fig. 10. White Permian L. S.: Guadalupe Mountains, New Mexico.

1887. Phillipsia perannulata. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 84. Carboniferous: Guadalupe Mountains, New Mexico.

#### Phillipsia præcursor Herrick.

1888. Phillipsia praecursor. Herrick, Bull. Den. Univ., vol. 3, p. 29, pl. 12, fig. 1. Waverly Group: Moot's Run, Ohio.

1888. Phillipsia (Prostus) præcursor. Herrick, Bull. Den. Univ., vol. 4, p. 54. pl. 1, figs. 1-3.

Waverly Group: 4 miles west of Granville, Ohio.

1889. Proctus (Phillipsia?) præcursor. Herrick, Am. Geol., vol. 3, pl. 1. figs. 1-3.

1891. Proëtus præcursor. Herrick, Bull. Geol. Soc. Am., vol. 2, pl. 1, fig. 12. Waverly Group: Cuyahoga Falls, Ohio.

1895. Pratus pracursor. Herrick, Geol. Surv. Ohio, vol. 7, pl. 14, figs. 1-3; 16a. Cuyahoga Shale: Moot's Run and Lodi, Ohio.

#### Phillipsia rockfordensis Winchell.

1865. Phillipsia Rockfordensis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 133. Marshall Group: Rockford, Indiana.

1887. Phillipsia rockfordensis. Herrick, Bull. Den. Univ., vol. 2, p. 62.
1887. Phillipsia rockfordensis. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 91. Goniatite L. S.: Rockford, Indiana.

### Phillipsia sampsoni Vogdes.

1888. Phillipsia sampsoni. Vogdes, Trans. N. Y. Acad. Sci., vol. 7, p. 248, 2 figs. Waverly Group: Sedalia, Missouri.

1894. Phillipsia sampsoni. Keyes, Mo. Geol. Surv., vol. 4, p. 235. Chouteau L. S.: Sedalia, Missouri.

Phillipsia sangamonensis. See Griffithides sangamonensis.

Phillipsia scitula. See Griffithides scitula.

Phillipsia sedaliensis. See Griffithides sedaliensis.

#### Phillipsia serraticaudata Herrick.

1888. Phillipsia serraticaudata. Herrick, Bull. Den. Univ., vol. 4, p. 52, pl. 1, figs. 8a-d.

Waverly Group: Richland County, Newark and Rushville, Ohio.

1889. Phillipsia serraticaudata. Herrick, Am. Geol., vol. 3, pl. 1, fig. 8 (11 ? ?).

1895. Phillipsia serraticaudata. Herrick, Geol. Surv. Ohio, vol. 7, pl. 14, figs. 8a-d. Upper Waverly Group: Newark, Ohio.

Phillipsia shumardi. See Proetus missouriensis.

Phillipsia swallovi. See Proetus swallovi.

Phillipsia tennesseensis Winchell. See Proetus tennesseensis.

# Phillipsia stevensoni Meek.

- \*1870. Phillipsia Stevensoni. Meek, 3d Ann. Rep. Board of Regents W. Va. Univ., p. 73.
  - Chester Series: Monongalia County, West Virginia.
- 1887. Phillipsia sterensoni. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 88, pl. 3, fig. 6. Chester Series: Monongalia County, West Virginia.

#### Phillipsia trinucleata Herrick.

- 1887. Phillipsia trinucleata. Herrick, Bull. Den. Univ., vol. 2, p. 64, pl. 1, fig. 23; pl. 2, fig. 32; pl. 3, fig. 21.
- Coal Measures: Flint Ridge, Ohio.
- 1888. Proetus trinucleatus. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 81, pl. 2, figs. 7-9.

Waverly Group: Flint Ridge, Licking County, Ohio.

## Phillipsia tuberculata Meek and Worthen.

- 1870. Phillipsia tuberculata. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 52.
  Burlington L. S.: Kinderhook, Pike County, Illinois.
- 1887. Phillipsia tuberculata. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 92. Burlington Group: Kinderhook, Pike County, Illinois.
- 1894. Phillipsia tuberculata. Keyes, Mo. Geol. Surv., vol. 4, p. 235, pl. 32, fig. 6. Burlington L. S.: Sedalia, Missouri.

## Phillipsia vindobonensis Hartt.

- 1868. Phillipsia Vindobonensis. Hartt, Dawson's Acad. Geol., p. 313.
- Carboniferous L. S.: Nova Scotia.
- 1887. Phillipsia vindobonensis. Herrick, Bull. Den. Univ., vol. 2, p. 63.
- 1887. Phillipsia vindobonensis. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 89 Lower Carboniferous: Windsor, Nova Scotia.

#### Phillipsia (species undetermined).

- 1855. Phillipsia. Schiel, Pac. R. R. Rep., vol. 2, p. 109, pl. 1, figs. 11, 14.
  Carboniferous L. S: Near Westport and west of Indian Creek.
- 1858. Phillipsia. Species not determined. Swallow, Trans. St. Louis Acad. Sci , vol. 1, p. 181.
  - Lower Permian: Kansas.
- 1866. *Phillipsia* sp. Geinitz, Carb. und Dyas in Nebr., p. 1, tab. 1, fig. 1. Plattsmouth, Nebraska.
- 1872. Phillipsia sp. Meek, U. S. Geol. Surv. Nebr., p. 237, pl. 3, figs. 1a, b. Upper Coal Measures: Plattsmouth, Nebraska.
- 1876. Phillipsia —— ? ——. White, Powell's Rep. Geol. Uinta Mts., p. 91.
  Lower Aubrey Group: Near Echo Park, Utah.
- 1888. Phillipsia? Herrick, Bull. Den. Univ., vol. 3, pl. 8, fig. 24.
  Waverly Group: Licking County, Ohio.
- 1888. Phillipsia (sp. ?) Keyes, Proc. Acad. Nat. Sci. Phil., p. 243.
  Lower Coal Measures: Des Moines, Iowa.
- 1897. Phillipsia sp. Smith, Proc. Am. Phil. Soc., vol. 35, p. 61. Lower Coal Measures: Johnson County, Arkansas.
- 1897. Phillipsia sp. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 272, pl. 20, fig. 11. Batesville S. S.: Batesville, Arkansas.

# (PHILOCRINUS DeKoninck, 1863.)

Philocrinus pelvis. See Erisocrinus typus.

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#### PHOLADELLA Hall, 1870.

Pholadella cuneata. See Promacrus cuneatus.

## Pholadella newberryi Hall.

- \*1870. Pholadella Newberryi. Hall, Prelim. Not. Lamell., 2, p. 65. Waverly S. S.: Licking County, Ohio.
- 1884. Pholadella Newberryi. Hall, Rep. N. Y. State Geol. for 1881, pl. 11, fig. 22.
  Waverly S. S.: Licking County, Ohio.
- 1885. Pholadella Newberryi. Hall, Pal. N. Y., vol. 5, pt. 1, p. 471, pl. 78, fig. 25. Waverly Group: Licking County, Ohio.
- 1888. Pholadella newberryi. Herrick, Bull. Den. Univ., vol. 3, p. 85, pl. 3, fig. 27; pl. 4, fig. 4.

Waverly Group: Licking County, Ohio.

- 1891. Pholadella Newberryi. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 609.
- 1895. Pholadella Newberryi. Whitfield, Geol. Surv. Ohio, vol. 7, p. 494.

## (PHOLADOMYA Sowerby, 1823.)

## Pholadomya elongata. See Allorisma elongatum.

# PHOLIDOCIDARIS Meek and Worthen, 1869.

## Pholidocidaris irregularis Meek and Worthen.

1869. Lepidocentrus irregularis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 78.

Keokuk L. S.: Hamilton and near Nauvoo, Illinois.

1873. Pholidocidaris irregularis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 512, pl. 15, fig. 9.

Keokuk Group: Hamilton and near Nauvoo, Illinois.

- 1874. Pholidocidaris irregularis. Meek, Am. Jour. Sci. (3), vol. 7, p. 375.
- 1895. Pholidocidaris irregularis. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 180. Keokuk L. S.: Hamilton and near Nauvoo, Illinois.

#### Pholidocidaris meeki Jackson.

1896. Philidocidaris meeki. Jackson, Bull. Geol. Soc. Am., vol. 7, p. 210, pl. 9, fig. 54.

Keokuk Group: Warsaw, Illinois.

#### PHOLIDOPS Hall, 1859

#### Pholidops (species undetermined).

1892. Pholidops compare P. Hamiltonia. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 4 I, fig. 37.

Bedford Shales: Bedford, Ohio.

### PHRAGMOCERAS Broderip, 1839.

## Phragmoceras expansum Winchell.

1863. Phragmocoras expansum. Winchell, Proc. Acad. Nat. Sci. Phil., p. 23. Yellow S. S.: Burlington, Iowa.

## Phragmoceras missouriense Miller.

1891. Phragmoceras missouriense. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 89, pl. 15, fig. 2.

Chouteau L. S.: Pettis County, Missouri.

1892. Phragmoceras missouriense. Miller, 17th Rep. Geol. Surv. Ind., p. 699, pl. 15, fig. 2.

Chouteau L. S.: Pettis County, Missouri.

1894. Phragmoceras missouriensis. Keyes, Mo. Geol. Surv., vol. 5, p. 220. Chouteau L. S.: Sedalia, Missouri.

## PHRAGMODICTYA Hall, 1884.

## Phragmodictya catilliformis Whitfield.

1881. Dictyophyton catilliforms. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 18, pl. 3, fig. 1.

Keokuk Group: Crawfordsville, Indiana.

1884. Phragmodictya catilliformis. Hall, 35th Rep. N. Y. State Mus. Nat. Hist., p. 477, pl. 18, figs. 12-14; pl. 20, figs. 2, 3; pl. 21, figs. 1-6. Keokuk Group: Crawfordsville, Indiana.

## Phragmodictya lineata Hall.

1884. Phragmodictya lineata. Hall, 35th Rep. N. Y. State Mus. Nat. Hist., p. 478, pl. 21, fig. 8.

Keokuk Group: Crawfordsville, Indiana.

## Phragmodictya patelliformis Hall.

1884. Phragmodictya patelliformis. Hall, 35th Rep. N. Y. State Mus. Nat. Hist., p. 478.

Keokuk Group: Crawfordsville, Indiana.

## PHTHANOCORIS Scudder, 1884.

#### Phthanocoris occidentalis Scudder.

1883. Phthanocoris occidentalis. Scudder, Proc. Bost. Soc. Nat. Hist., vol. 22, p. 59.

Coal Measures: Kansas City, Missouri.

1885. Phthanocoris occidentalis. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 348, pl. 32, fig. 4.

Coal Measures: Kansas City, Missouri.

1890. Phthanocoris occidentalis. Scudder, Foss. Insc. N. A., vol. 1, p. 312, pl. 18, fig. 4.

Coal Measures: Kansas City, Missouri.

## PHYSA Dapernaud, 1801.

#### Physa prisca Walcott.

1883. Physa prisca. Walcott, Science, vol. 2, p. 808, fig. 2.

Base of Carboniferous: Eureka District, Nevada.

1884. Physa prisca. Walcott, Pal. Eureka Dist., p. 262, fig. 6.

Lower Carboniferous: Eureka District, Nevada.

# PHYSETOCRINUS Meek and Worthen, 1869.

## Physetocrinus asper Meek and Worthen.

1869. Strotocrinus (Physetocrinus?) asper. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 161.

Upper Burlington L. S.: Burlington, Iowa.

1873. Strotocrinus (Physetocrinus?) asper. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 351, pl. 7, fig. 1.

Burlington L. S.: Burlington, Iowa.

1897. Physetocrinus asper. Wachsmuth and Springer, N. Am. Crin. Cam., p. 596, pl. 63, figs. 7a, b.

Upper Burlington L. S.: Burlington, Iowa.

## Physetocrinus copei Miller.

1881. Actinocrinus copei. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 4, p. 310. Subcarboniferous: Lake Valley Mining District, New Mexico.

1897. Physetocrinus Copei. Wachsm wit and Springer, N. Am. Crin. Cam., p. 598, pl. 63, fig. 5.

Lower Burlington L. S.: Lake Valley, New Mexico.

#### Physetocrinus dilatatus Meek and Worthen.

- 1869. Strotocrinus (Physetocrinus) dilatatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 162.
  - Lower Burlington L. S.: Burlington, Iowa.
- 1873. Strotocrinus (Physetocrinus) dilatatus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 363, pl. 10, fig. 6.
  - Burlington L. S.: Burlington, Iowa.
- 1897. Physetocrinus dilatatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 595, pl. 64, figs. 9, 10.
  Upper Burlington L. S.: Burlington, Iowa.

## Physetocrinus lobatus Wachsmuth and Springer.

1897. Physetocrinus lobatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 599, pl. 63, figs. 8a, b.

Lower Burlington L. S.: Lake Valley, New Mexico.

#### Physetocrinus ornatus Hall.

- 1858. Actinocrinus ornatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 583, pl. 10, fig. 12. Burlington L. S.: Burlington, Iowa.
- 1860. Actinocrinus senarius. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, p. 25. Burlington L. S.: Burlington, Iowa.
- 1892. Actinocrinus brittsi. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 36, pl. 6, figs. 1-4.
  Burlington Group: Sedalia, Missouri.
- 1894. Actinocrinus brittsi. Miller, 18th Rep. Geol. Surv. Ind., p. 290, pl. 6, figs. 1-4. Burlington Group: Sedalia, Missouri.
- 1894. Actinocrinus brittsi. Keyes, Mo. Geol. Surv., vol. 4, p. 188. Burlington L. S.: Sedalia, Missouri.
- 1894. Physetocrinus ornatus. Kayes, Mo. Geol. Surv., vol. 4. p. 192, pl. 24, fig. 7. Lower Burlington L. S.: Hannibal, Louisiana, and Sedalia, Missouri.
- 1897. Physetocrinus ornatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 597, pl. 63, figs. 1-4.

Lower Burlington L. S.: Burlington, Iowa.

## Physetocrinus sampsoni Miller and Gurley.

1896. Physetocrinus sampsoni. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 14, pl. 1, figs. 5-7.
 Burlington Group: Sedalia, Missouri.

#### Physetocrinus ventricosus Hall.

- 1858. Actinocrinus ventricosus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 595, pl. 11, figs. 6a, b.
  - Burlington L. S.: Burlington, Iowa.
- 1860. Actinocrinus subventricosus. McChesney, Desc. New Pal. Foss., p. 21. Burlington L. S.: Burlington, Iowa.
- 1860. Actinocrinus ventricosus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, pl. 2, fig. 5.
- 1861. Actinocrinus ventricosus var. cancellatus. Hall, Desc. New Spec. Crin., p. 3. Burlington L. S.
- 1861. Actinocrinus ventricosus var. internodius. Hall, Desc. New Spec. Crin., p. 3. Burlington L. S.
- 1861. Actinocrinus rentricosus var. internodius. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 278.
  Burlington L. S.: Burlington, Iowa.
- 1861. Actinocrinus rentricosus var. reticulatus. Hall, Jour. Bost. Soc. Nat. Hist.,
- vol. 7, p. 279.

  1865. Actinocrinus subventricosus. McChesney, Ill. New Spec. Foss., pl. 4, figs. 6a-b.

#### Physetocrinus ventricosus Hall—Continued.

1868. Actinocrinus subventricosus. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 16, pl. 4, figs. 6a, b.

Burlington L. S.: Burlington, Iowa.

1894. Physetocrinus ventricosus. Keyes, Mo. Geol. Surv., vol. 4, p. 192. Upper Burlington L. S.: Hannibal and Sedalia, Missouri.

1897. Physetocrinus rentricosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 593, pl. 63, fig. 6; pl. 64, figs. 1-7, 8a, b.

Upper and Lower Burlington L. S.: Burlington, Iowa; Missouri.

## PHYSOSPONGIA Hall, 1884.

## Physospongia alternata Hall.

1884. Physospongia alternata. Hall, 35th Rep., N. Y. State Mus. Nat. Hist., p. 481, pl. 20, fig. 9.

Keokuk Group: Crawfordsville, Indiana.

# Physospongia colletti Hall.

1884. Physospongia Colletti. Hall, 35th Rep. N. Y. State Mus. Nat. Hist., p. 480, pl. 20, fig. 7.

Keokuk Group: Crawfordsville, Indiana.

#### Physospongia dawsoni Whitfield.

1881. Uphantaenia Dawsoni. Whitfield, Am. Jour. Sci. (3), vol. 22, p. 132. Keokuk Group: Crawfordsville, Indiana.

1881. Uphantania Dawsoni. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 16, pl. 4, figs. 1, 2.

Keokuk Group: Crawfordsville, Indiana.

1884. Physospongia Dawsoni. Hall, 35th Rep., N. Y. State Mus. Nat. Hist., p. 479, pl. 20, figs. 4-6, 8.

Keokuk Group: Crawfordsville, Indiana.

## (PILEOPSIS Lamark, 1812.)

#### Pileopsis pabulocrinus. See Igoceras pabulocrinus.

## PINNA Linnaeus, 1758.

## Pinna adamsi. See Pinna peracuta.

#### Pinna arkansana Weller.

1897. Pinna arkansana. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 260, pl. 19, figs. 1, 2.

Batesville S. S.: Batesville, Arkansas.

#### Pinna consimilis Walcott.

. 1884. Pinna consimilis. Walcott, Pal. Eureka Dist., p. 236, pl. 20, fig. 13.

Lower Carboniferous: Eureka District and White Pine District, Nevada.

#### Pinna hinrichsana White and St. John.

1868. Pinna Hinrichsiana. White and St. John, Trans. Chicago Acad. Sci., vol. 1, p. 122, fig. 7.

St. Louis L. S.: Near Pella, Iowa.

#### Pinna inexpectans Walcott.

1884. Pinna inexpectans. Walcott, Pal. Eureka District, p. 235, pl. 19, fig. 11. Lower Carboniferous: Eureka District, Nevada.

#### Pinna ludlovi Whitfield.

1876. Pinna Ludlovi. Whitfield, Ludlow's Reconn. Carroll, Mont., to Yell. Nat. Park, p. 143, pl. 1, figs. 6, 7.

Coal Measure L. S.: Canyon of Musselshell, Montana.

#### Pinna marshallensis Winchell.

1865. Pinna † Marshallensis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 126. Marshall Group: Napoleon Cut, Jackson County, Michigan.

#### Pinna maxvillensis Whitfield.

- 1882. Pinna Maxvillensis. Whitfield, Ann. N. Y. Acad. Sci., vol. 2, p. 221.

  Maxville L. S.: Maxville, Ohio.
- 1891. Pinna Maxvillensis. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 586, pl. 14, fig. 5.

Maxville L. S.: Maxville, Ohio.

1895. Pinna Maxvillensis. Whitfield, Geol. Surv. Ohio, vol. 7, p. 474, pl. 10, fig. 5. Maxville L. S.: Maxville, Ohio.

#### Pinna missouriensis Swallow.

- 1863. Pinna Missouriensis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 97.
  Ste. Genevieve L. S.: Missouri and Illinois.
- 1894. Pinna missouriensis. Keyes, Mo. Geol. Surv., vol. 5, p. 116. St. Louis L. S.: Ste. Genevieve, Missouri.

#### Pinna peracuta Shumard.

- 1858. Pinna peracuta. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 214. Upper Coal Measures: Iowa Point, Nebraska; Kansas.
- 1860. Pinna adamsi. McChesney, Desc. New Pal. Foss., p. 74.
  Coal Measures: Lasalle, Illinois.
- 1872. Pinna peracuta. Meek, U. S. Geol. Surv. Nebr., p. 198, pl. 6, figs. 11a, b. Upper Coal Measures: Bennett's Mill, Wyoming; Nebraska City, Plattsmouth, Rock Bluff, and Bellevue, Nebraska.
  Coal Measures: Iowa, Nebraska, Kansas, Missouri, and Illinois.
- 1877. Pinna peracuta (†) White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 151, pl. 11, fig. 5a.

Carboniferous: Near Relief Spring, Arizona.

- 1884. Pinna peracuta. White, 13th Rep. Geol. Surv. Ind., p. 145, pl. 28, figs. 1, 2. Upper, Middle, and Lower Coal Measures: Indiana.
- 1886. Pinna peracuta. Heilprin, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 272, fig. 12; p. 273, fig. 12a.

Mill Creek L. S. Upper Coal Measures: Wilkesbarre, Pennsylvania.

- 1886. Pinna peracuta. Heilprin, 2d Geol. Surv. Penn., Ann. Rep. 1885, p. 455, p. 444, fig. 12; p. 454, fig. 12a.
  Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.
- 1894. Pinna peracuta. Keyes, Mo. Geol. Surv., vol. 5, p. 116, pl. 45, figs. 2a, b. Upper Coal Measures: Kansas City, Missouri.

## Pinna sancti-ludovici Worthen.

- 1883. Pinna St. Ludovioi. Worthen, Geol. Surv. Ill., vol. 7, p. 326.
  St. Louis L. S.: Monroe County, Illinois.
- 1890. Pinna sancti-ludovici. Worthen, Geol. Surv. Ill., vol. 8, p. 111, pl. 19, fig. 6. St. Louis L. S.: Monroe County, Illinois.

#### Pinna subspatulata Worthen.

1875. Pinna subspatulata. Worthen, Geol. Surv. Ill., vol. 6, p. 524, pl. 30, fig. 4. Keokuk L. S.: Keokuk, Iowa; Warsaw, Illinois. Warsaw beds: Warsaw, Illinois.

#### PINNATOPORA Vine, 1883.

## Pinnatopora bellula Ulrich.

1890. Pinnatopora bellula. Ulrich, Geol. Surv. Ill., vol. 8, p. 619, pl. 66, figs. 8-8b. Base of Coal Measures: Seville, Illinois.

## Pinnatopora conferta Ulrich.

1890. Pinnatopora conferta. Ulrich, Geol. Surv. Ill., vol. 8, p. 618, pl. 56, fig. 5; pl. 66, fig. 6.

Keokuk Group: Keokuk, Iowa; Otter Creek, Jersey County, Illinois.

1894. Pinnatopora conferta. Keyes, Mo. Geol. Surv., vol. 5, p. 31. Keokuk L. S.: Keokuk, Iowa.

## Pinnatopora curvata Ulrich.

1888. Pinnatopora curvata. Ulrich, Bull. Den. Univ., vol. 4, p. 76, pl. 14, fig. 4. Cuyahoga Shale: Richfield, Ohio.

## Pinnatopora flexuosa Ulrich.

1890. Pinnatopora fleruosa. Ulrich, Geol. Surv. Ill., vol. 8, p. 617, pl. 66, figs. 4-4c. Keokuk Group: King's Mountain, Kentucky.

#### Pinnatopora intermedia Ulrich.

1888. Pinnatopora intermedia. Ulrich, Bull. Den. Univ., vol. 4, p. 74, pl. 14, fig. 1. Cuyahoga Shale: Richfield, Ohio.

1888. Pinnatopora intermedia. Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 37. Waverly Group: Ohio.

## Pinnatopora minor Ulrich.

1888. Pinnatopora minor. Ulrich. Bull. Den. Univ., vol. 4, p. 77, pl. 14, figs. 7, 7a. Cuyahoga Shale: Richfield, Ohio.

## Pinnatopora nereidis White.

1874. Glauconome nereidis. White, Prelim. Rep. Inv. Foss., p. 18. Carboniferous: White Mountain and Black rivers, Arizona.

1877. Glauconome nereidis. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 105, pl. 7, figs. 5a-e.

Carboniferous: Confluence of White Mountain and Black rivers, Arizona.

#### Pinnatopora simulatrix Ulrich.

1888. Pinnatopora simulatrix. Ulrich, Bull. Den. Univ., vol. 4, p. 75, pl. 14, fig. 3. Cuyahoga Shale: Richfield, Ohio.

#### Pinnatopora striata Ulrich.

1890. Pinnatopora striata. Ulrich, Geol. Surv. Ill., vol. 8, p. 617, pl. 66, fig. 4d. Keokuk Group: Bentonsport, Iowa.

#### Pinnatopora subangulata Ulrich.

1888. Pinnatopora subangulata. Ulrich, Bull. Den. Univ., vol. 4, p. 76, pl. 14, fig. 2. Cuyahoga Shale: Cuyahoga Falls, Ohio.

#### Pinnatopora tenuiramosa Ulrich.

1888. Pinnatopora tenuiramosa. Ulrich, Bull. Den. Univ., vol. 4, p. 79. Cuyahoga Shale: Richfield, Ohio.

1890. Pinnatopora tenuiramosa. Ulrich, Geol. Surv. Ill., vol. 8, p. 619, pl. 66, fig. 7. Waverly Group: Near Richfield, Ohio.

## Pinnatopora trilineata Meek.

Glauconome trilineata. Meek, U. S. Geol. Surv. Nebr., p. 157, pl. 7, figs. 4a-d.
 Upper Coal Measures: Nebraska City, Nebraska.

1890. Pinnatopora trilineata. Ulrich, Geol. Surv. Ill., vol. 8, p. 620, pl. 66, fig. 6. Upper Coal Measures: Sangamon County, Illinois.

1894. Pinnatopora trilineata. Keyes, Mo. Geol. Surv., vol. 5, p. 31. Upper Coal Measures: Kansas City, Missouri.

#### Pinnatopora vinei Ulrich.

1888. Pinnatopora vinci. Ulrich, Bull. Den. Univ., vol. 4, p. 77, pl. 14, fig. 5. Cuyahoga Shale: Richfield, Lodi, and Bagdad, Ohio. Keokuk Group: King's Mountain, Kentucky; Keokuk, Iowa.

#### Pinnatopora vinei Ulrich—Continued.

1890. Pinnatopora vinei. Ulrich, Geol. Surv. Ill., vol. 8, p. 616, pl. 66, figs. 5-5b. Keokuk Group: King's Mountain, Kentucky; Keokuk, Iowa. Cuyahoga Shale: Ohio.

1894. Pinnatopora vinei. Keyes, Mo. Geol. Surv., vol. 5, p. 31. Keokuk L. S.: Keokuk, Iowa.

#### Pinnatopora whitii Foerste.

1887. Glauconome whitii. Foerste, Bull. Den. Univ., vol. 2, p. 78, pl. 7, figs. 4a-c. Coal Measures: Flint Ridge, Ohio.

1887. Pinnatopora Whitii. Foerste, Bull. Den. Univ., vol. 2, p. 87.

## Pinnatopora youngi Ulrich.

1888. Pinnatopora youngi. Ulrich, Bull. Den. Univ., vol. 4, p. 78, pl. 14, figs. 6, 6a. Cuyahoga Shale: Richfield and Lodi, Ohio. Keokuk Group: King's Mountain, Kentucky; Keokuk, Iowa.

1890. Pinnatopora youngi. Ulrich, Geol. Surv. Ill., vol. 8, p. 615, pl. 66, fig. 3. Keokuk Group: King's Mountain, Kentucky; Keokuk, Iowa. Cuyahoga Shale: Ohio.

1894. Pinnatopora youngi. Keyes, Mo. Geol. Surv., vol. 5, p. 31. Keokuk L. S.: Keokuk, Iowa.

## PLACUNOPSIS Morris and Lycett, 1853.

#### Placunopsis carbonaria Meek and Worthen.

\*1866. Placunopsis carbonaria. Meek and Worthen, Proc. Chicago Acad. Sci., vol. 1, p. 13.

Upper Coal Measures: Springfield, Illinois.

1873. Placunopsis carbonaria. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 578, pl. 27, fig. 2.

Upper Coal Measures: Springfield, Illinois.

1874. Placunopsis carbonaria. Meek, Am. Jour. Sci. (3), vol. 7, p. 583.

1887. Placunopsis carbonaria. Herrick, Bull. Den. Univ., vol. 2, p. 145, pl. 14, fig. 27.

Coal Measures: Flint Ridge, Ohio.

1894. Placunopsis carbonaria. Keyes, Mo. Geol. Surv., vol. 5, p. 108, pl. 43, fig. 9. Upper Coal Measures: Kansas City, Missouri.

## Placunopsis recticardinalis Meek.

1875. Placunopsis rectioardinalis. Meek, Pal. Ohio, vol. 2, p. 331, pl. 19, fig. 12.
Coal Measures: Flint Ridge and Putnam Hill, Ohio.

1887. Placunopsis recticardinalis. Herrick, Bull. Den. Univ., vol. 2, p. 43, pl. 4, fig. 11.

Coal Measures: Flint Ridge, Ohio.

# (PLATYCERAS Conrad, 1840.)

Platyceras acutirostre. See Orthonychia acutirostre.

Platyceras biseriale. See Capulus biserialis.

Platyceras bivolve. See Strophostylus bivolve.

Platyceras boonvillense. See Orthonychia boonvillensis.

Platyceras capax. See Capulus capax.

Platyceras capulus. See Igoceras capulus.

Platyceras chesterense. See Orthonychia chesterense.

Platyceras cornuforme. See Orthonychia cornuforme.

Platyceras cyrtolites. See Orthonychia cyrtolites.

Platyceras equilatera. See Capulus equilateralis.

Platyceras extinctor. See Igoceras pabulocrinus.

Platyceras fissurellum. See Igoceras fissurella.

Platyceras formosum. See Orthonychia formosum.

Platyceras haliotoides. See Capulus haliotoides.

Platyceras herzeri. See Capulus herzeri.

Platyceras infundibulum. See Igoceras pabulocrinus.

Platyceras lævigatum. See Capulus ovalis.

Platyceras latum. See Capulus latus.

Platyceras lodiense. See Capulus lodiensis.

Platyceras missouriense. See Igoceras quincyense.

Platyceras nasutum. See Capulus nasutum.

Platyceras nebrascense. See Capulus parvus.

Platyceras obliquum. See Capulus obliquus.

Platyceras occidens. See Capulus occidens.

Platyceras paralium. See Capulus paralius.

Flatyceras pettisense. See Igoceras quincyense.

Platyceras piso. See Capulus piso.

Platyceras quincyense. See Igoceras quincyense.

Platyceras reversum. See Strophostylus reversus.

Platyceras spinigerum. See Capulus spinigerum.

Platyceras subplicatum. See Igoceras subplicatum.

Platyceras subrectum. See Igoceras pabulocrinus.

Platyceras tortum. See Naticopsis torta.

Platyceras tribulosum. See Capulus tribulosus.

Platuceras uncum. See Orthonychia acutirostre.

Platyceras vomerium. See Capulus vomerium.

Platyceras (species undetermined). See Capulus (species undetermined).

## PLATYCRINUS Miller, 1821.

#### Platycrinus absentivus Miller.

1891. Platycrinus absenticus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 15, pl. 1, fig. 15. Chouteau Group: Leucke's Quarry, 6 miles southeast of Sedalia, Missouri.

1894. Platycrinus absentirus. Keyes, Mo. Geol. Surv., vol. 4, p. 196. Chouteau L. S.: Sedalia, Missouri.

#### Platycrinus acclivus Miller.

1891. Platycrinus acclivus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 12, pl. 1, figs. 9, 10.

Burlington Group: Near Sedalia, Missouri.

1897. Platycrinus acclivus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 663. Upper Burlington L. S.: Sedaha, Missouri.

## Platycrinus æqualis Hall.

- \*1861. Platycrinus acqualis. Hall, Desc. New Spec. Crin., p. 17.
  Burlington L. S.
- 1873. Platycrinites æqualis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 456, pl. 3, fig. 8.

Burlington L. S.: Burlington, Iowa.

- 1891. Platycrinus batiola. Miller, Bull. Geol. Surv. Mo., No. 4, p. 22, pl. 3, figs. 1, 2. Burlington Group: Sedalia, Missouri.
- 1894. Platycrinus æqualis. Keyes, Mo. Geol. Surv., vol. 4, p. 200. Burlington L. S.: Sedalia and Louisiana, Missouri.
- 1897. Platyorinus æqualis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 674, pl. 71, figs. 4a, b, 5.

Upper Burlington L. S.: Pleasant Grove and Burlington, Iowa.

## Platycrinus sequiternus Miller.

1891. Platycrinus æquiternus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 14, pl. 1, fig. 13.

Chouteau L. S.: Near Sedalia, Missouri.

1891. Platycrinus curryvillensis. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 98, pl. 2, fig. 5.

Chouteau L. S.: 3 miles east of Curryville, Missouri.

1894. Platycrinus æquiternus. Keyes, Mo. Geol. Surv., vol. 4, p. 196.

Chouteau L. S.: Sedalia, Missouri.

1897. Platycrinus æquiternus. Wachsmuth and Springer, N. Am. Crin. Cam. p. 658, pl. 71, fig. 12.

Chouteau L. S.: Sedalia, Missouri.

## Platycrinus æternalis. See Platycrinus bonoensis.

## Platycrinus agassizi Wachsmuth and Springer.

1890. Platyorinus planus? Wachsmuth and Springer, Geol. Surv. Ill., vol. 8, p. 188, pl. 16, fig. 8.

Kinderhook Group: Le Grand, Iowa.

1897. Platycrinus Agassizi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 669, pl. 69, fig. 4.

Kinderhook Group: Le Grand, Marshall County, Iowa.

## Platuorinus alabamensis. See Platycrinus huntsvillæ.

#### Platycrinus allophylus Miller.

1891. Platycrinus allophyllus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 9, pl. 1, figs. 3, 4.

Chouteau L. S.: Leucke's Quarry, 6 miles southeast of Sedalia, Missouri.

1894. Platycrinus allophylus. Keyes, Mo. Geol. Surv., vol. 4, p. 196.

Chouteau L. S.: Sedalia, Missouri.

1897. Platyorinus allophylus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 685, pl. 71, fig. 17.

Chouteau L. S.: Near Sedalia, Missouri.

#### Platycrinus altidorsatus Rowley and Hare.

1891. Platycrinus alti-dorsatus. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 97, pl. 2, fig. 2.

Upper Burlington Chert: Louisiana, Missouri.

## Platycrinus amabilis Miller.

1891. Platyorinus amabilis. Miller, Bull. Geol. Surv. Mo., No. 4., p. 19, pl. 2, figs. 9, 10.

† Burlington Group: Sedalia, Missouri.

Bull. 153—28

## Platycrinus americanus Owen and Shumard.

- 1852. Platycrinus Americanus. Owen and Shumard, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 89, pl. 11, fig. 1.
  - Carboniferous L. S.: Burlington, Iowa.
- 1852. Platycrinus americanus. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 594, tab. 5 B, figs. 1a, b.
  - Carboniferous L. S.: Burlington, Iowa.
- 1858. Platyorinus truncatus. Hall, Geol. lowa, vol. 1, pt. 2, p. 537. Burlington L. S.: Burlington, Iowa.
- 1891. Platycrinus Broadheadi. Miller, Bull. Geol. Surv. Mo., No. 4, p. 21, pl. 2, fig. 15.
  - Burlington Group: Sedalia, Missouri.
- 1894. Platycrinus americanus. Keyes, Mo. Geol. Surv., vol. 4, p. 199, pl. 25, figs. 2a, b.
  - Lower Burlington L. S.: Sedalia, Louisiana, and Hannibal, Missouri; Kinderhook, Illinois; Burlington, Iowa.
- 1897. Platycrinus americanus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 686, pl. 75, figs. 10-12, 13a-c.
  - Lower Burlington L. S.: Burlington, Iowa; Quincy, Illinois; Missouri.

## Platverinus annosus Miller.

- 1891. Platycrinus annosus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 14, pl. 1, fig. 12. Chouteau L. S.: Near Sedalia, Missouri.
- 1894. Platyorinus annosus. Keyes, Mo. Geol. Surv., vol. 4, p. 196. Chouteau L. S.: Sedalia, Missouri.

# Platycrinus asper Meek and Worthen.

- 1861. Platyorinus (Pleurocrinus) asper. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 129.
  - Burlington L.S.: Burlington, Iowa.
- 1868. Platycrinus (Pleurocrinus) asper. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 468, pl. 18, fig. 9.
  Burlington Group: Burlington, Iowa.
- 1897. Platyorinus asper. Wachsmuth and Springer, N. Am. Crin. Cam., p. 690, pl. 68, figs. 9a, b.
  - Upper Burlington L. S.: Burlington, Iowa.

## Platycrinus batiola. See Platycrinus æqualis.

## Platycrinus blairi Miller.

- 1891. Platyorinus Blairi. Miller, Bull. Geol. Surv. Mo., No. 4, p. 21, pl. 2, figs. 13, 14.
  - Burlington Group: Sedalia, Missouri.

## Platycrinus bloomfieldensis. See Platycrinus planus.

#### Platycrinus bonoensis White.

- 1878. Platycrinus Bonoensis. White, Proc. Acad. Nat. Sci. Phil., p. 30. Keokuk Group: Bono, Lawrence County, Indiana.
- 1880. Platycrinus bonoensis. White, Cont. to Inv. Pal., No. 8, p. 160, pl. 40, fig. 5a. Keokuk Group: Bono, Lawrence County. Indiana.
- 1891. Platycrinus æternalis. Miller, Bull. Geol. Surv. Mo., No. 4, p. 11, pl. 1, fig. 8. Keokuk Group: Boonville, Missouri.
- 1892. Platycrinus caducus. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 13, pl. 2, fig. 13.
  - Keokuk Group: Boonville. Missouri.
- 1894. Platycrinus caducus. Miller, 18th Rep. Geol. Surv. Ind., p. 267, pl. 2, fig. 13. Keokuk Group: Boonville, Missouri.
- 1894. Platycrinus honocesis. Keyes, Mo. Geol. Surv., vol. 4, p. 201. Keokuk L. S.: Boonville, Missouri.

## Platycrinus ponoensis White—Continued.

1897. Platyorinus bonoensis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 683, pl. 69, fig. 6.

Keokuk and Warsaw L. S.: Bono, Indiaha; Boonville, Missouri.

## Platycrinus boonvillensis Miller.

1891. Platycrinus Boonvillensis. Miller, Bull. Geol. Surv. Mo., No. 4, p. 8, pl. 1, figs. 1, 2.

Keokuk Group: Boonville, Missouri.

1894. Platycrinus boonvillensis. Keyes, Mo. Geol. Surv., vol. 4, p. 202. Keokuk L. S.: Boonville, Missouri.

1897. Platycrinus boonvillensis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 681, pl. 72, figs. 8a, b, 9.

Warsaw L. S.: Boonville, Missouri; Spergen Hill, Indiana.

#### Platycrinus bozemanenis Miller and Gurley.

1897. Platycrinus bozemanensis. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 42, pl. 3, fig. 5.

Burlington or Keokuk Group: Bridger Mountains, near Bozeman, Montana.

#### Platycrinus brevinodus Hall.

1861. Platycrinus brevinodus. Hall, Desc. New Spec. Crin., p. 4.
Burlington L. S.

1861. Platyorinus brevinodus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 286. Keokuk L. S.: Keokuk, Iowa.

1872. Platycrinus brevinodus. Hall, Photo. Plates of Crinoids, pl. 2, fig. 5.

1897. Platycrinus brevinodus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 688, pl. 70, figs. 2, 5, 6a, b.

Keokuk Group: Keokuk, Iowa; Indian Creek, Indiana.

Burlington Keokuk transition bed: near Burlington, Iowa.

## Platycrinus bridgerensis Miller and Gurley.

1897. Platycrinus bridgerensis. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 43, pl. 3, fig. 8.

Burlington or Keokuk Group: Bridger Mountains, near Bozeman, Montana.

#### Platverinus brittsi Miller.

1891. Platycrinus Brittsi. Miller, Bull. Geol. Surv. Mo., No. 4, p. 23, pl. 3, figs. 3, 4. Chonteau Group: Pin Hook Bridge, Missouri.

1894. Platycrinus brittsi. Keyes, Mo. Geol. Surv., vol. 4, p. 195. Chouteau L. S.: Sedalia, Missouri.

1897. Platyorinus Britsi. Wachsmuth and Springer, N. Am. Crim., p. 659, pl. 71, fig. 10.

Chouteau Group: Pin Hook Bridge, Missouri.

#### Platycrinus broadheadi. See Platycrinus americanus.

#### Platycrinus burlingtonensis Owen and Shumard.

1850. Platycrinus Burlingtonensis. Owen and Shumard, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 60, pl. 7, fig. 5.
Subcarboniferous L. 8.: Burlington, Iowa.

1852. Platycrinus burlingtonensis. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 589, tab. 5 A, fig. 5.
Subcarboniferous L. S.: Burlington, Iowa.

1858. Platycrinus exertus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 539. Burlington L. S.: Burlington, Iowa.

1858. Platycrinus nodobrachiatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 542. Burlington L. S.: Burlington, Iowa.

1858. Platyorinus nucleiformis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 540, Burlington L. S.: Burlington, Iowa.

## Platyerinus burlingtonensis Owen and Shumard-Continued.

- 1860. Platycrinus inornatus. McChesney, Desc. New Pal. Foss., p. 6. Burlington L. S.: Burlington, Iowa; Monmouth, Illinois.
- 1865. Platyorinus inornatus. McChesney, Ill. New Spec. Foss., pl. 4, figs. 3a-b.
- 1868. Platycrinus burlingtonensis. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 4, pl. 4, figs. 3a, b.

Burlington L. S.: Monmouth, Illinois.

- 1873. Platycrinites Burlingtonensis. Meek and Worthen, Gool. Surv., Ill., vol. 5. p. 452, pl. 3, fig. 6.
- Burlington L. S.: Burlington, Iowa.
- 1891. Platyorinus lautus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 17, pl. 2, figs. 3, 4. Burlington Group: Sedalia, Missouri.
- 1894. Platycrinus burlingtonensis. Keyes, Mo. Geol. Surv., vol. 4, p. 200. Lower Burlington L. S.: Sedalia and Hannibal, Missouri.
- 1897. Platycrinus burlingtonensis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 653, pl. 69, figs. 3a-i. Lower Burlington L. S.: Burlington, Iowa; Missouri; New Mexico.

Platycrinus caducus. See Platycrinus bonoensis.

# Platycrinus calvculus Hall.

\*1861. Platycrinus calyculus. Hall, Desc. New Spec. Crin., p. 16. Burlington L. S.

#### Platycrinus canaliculatus Hall.

- 1858. Platycrinus canaliculatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 539. Burlington L. S.: Burlington, Iowa.
- 1897. Platycrinus canaliculatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 689, pl. 75, figs. 7a, b. Lower Burlington L. S.: Burlington, Iowa.

Platycrinus carchesium. See Platycrinus pileiformis.

# Platycrinus casula Miller and Gurley.

1895. Platycrinus casula. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 76, pl. 4, figs. 37-40.

Burlington Group: Sedalia, Missouri.

## Platycrinus cavus Hall.

- 1858. Platycrinus carus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 527, pl. 8, figs. 1a, b. Burlington L. S.: Burlington, Iowa.
- 1897. Platyorinus cavus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 715. pl. 67, figs. 8a, b.

Upper Burlington L. S.: Burlington, Iowa.

#### Platycrinus chouteauensis Miller.

- 1892. Platycrinus chouteauensis. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 14, pl. 2, figs. 14, 15.
  - Chouteau L. S.: Sedalia, Mo.
- 1894. Platycrinus chouteauensis. Miller, 18th Rep. Geol. Surv. Ind., p. 268, pl. 2, figs. 14, 15.

Chouteau L. S.: Sedalia, Missouri.

#### Platverinus clinatus Miller and Gurley.

1895. Platycrinus clinatus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 74, pl. 4, figs. 26-30.

Chouteau L. S.: Sedalia, Missouri.

Platycrinus olytis. See Platycrinus scobina.

#### Platycrinus colletti Miller.

1892. Platycrinus colletti. Miller. Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 14, pl. 2, figs. 16, 17.

Chouteau L. S.: Near Sedalia, Missouri.

1894. Platyorinus colletti. Miller, 18th Rep. Geol. Surv. Ind., p. 268, pl. 2, figs, 16, 17.

Chouteau L. S.: Near Sedalia, Missouri.

#### Platycrinus concinnulus Miller and Gurley.

1896. Platyorinus concinnulus. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 63, pl. 4, figs. 16-16.

Burlington Group: Sedalia, Missouri.

### Platycrinus concinnus Miller.

1891. Platycrinus concinnus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 18, pl. 2, figs. 5, 6.

Burlington Group: Sedalia, Missouri.

#### Platverinus contritus Hall.

1864. Platyorinus contritus. Hall, 17th Rep. N. Y. State Cab. Nat. Hist., p. 54. Waverly Group: Richfield, Ohio.

1875. Platyorinus contritus. Hall and Whitfield, Pal. Ohio, vol. 2, p. 166, pl. 11, fig. 4.

Waverly Group: Richfield, Ohio.

1897. Platycrinus contritus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 667, pl. 71, fig. 8.

Waverly Group: Richfield, Ohio.

#### Platycrinus corbuliformis Rowley and Hare.

1891. Platyorinus corbuliformis. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 113, pl. 3, figs. 1, 2.

Lower Burlington L. S.: Louisiana, Missouri.

1897. Platyorinus corbuliformis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 657, pl. 71, figs. 11a, b.

Lower Burlington L. S.: Burlington, lowa.

#### Platycrinus corrugatus. See Platycrinus discoideus.

#### Platycrinus cortina Miller and Gurley.

1894. Platycrinus cortina. Miller and Gurley, Bull. No. 5, Ill. State Mus. Nat. Hist., p. 40, pl. 3, figs. 15, 16.

Chouteau L. S.: Sedalia, Missouri.

# Platycrinus curryvillensis. See Platycrinus æquiternus.

#### Platycrinus davisi Wachsmuth and Springer.

1897. Platycrinus Daviri. Wachsmuth and Springer, N. Am. Crin. Cam., p. 684, pl. 70, fig. 14.

Lower Burlington L. S.: Hannibal, Missouri.

# Platycrinus discoideus Owen and Shumard.

1850. Platycrinus discoideus. Owen and Shumard, Jour. Acad. Nat. Sci. Phil. (2) vol. 2, p. 58, pl. 7, fig. 1.

Subcarboniferous: Burlington and Augusta, Iowa.

1850. Platyorinus corrugatus. Owen and Shumard, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 59, pl. 7, fig. 2.

Subcarboniferous: Burlington, Iowa.

1852. Platycrinus discoideus. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 588, tab. 5 A, figs. 1a, b.

Subcarboniferous L. S.: Burlington and Augusta, lows.

#### Platverinus discoideus Owen and Shumard—Continued.

1852. Platyorinus corrugatus. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 289, tab. 5 A, figs. 2a-e.

Subcarboniferous L. S.: Burlington, Iowa.

- 1858. Platyorinus shumardanus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 532, pl. 8, fig. 5. Burlington L. S.: Burlington, Iowa.
- 1861. Platycrinus striobrachiatus. Hall, Desc. New Crin., p. 4. Burlington L. S.
- 1861. Platycrinus striobrachiatus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 287. Burlington L. S.: Burlington, Iowa,
- 1861. Platycrinus multi-brachiatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 135.

Burlington L. S.: Burlington, Iowa.

- 1872. Platycrinus striobrachiatus. Hall, Photo. Plates of Crinoids, pl. 2, figs. 2, 3.
- 1891. Platycrinus pulcellus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 11, pl. 1, fig. 7. Burlington Group: Near Sedalia, Missouri.
- 1893. Platycrinus striobrachiatus. Whitneld, Mem. Am. Mus. Nat. Hist., vol. 1, p. 4, pl. 3, figs. 2-4.
- Burlington L. S.: Burlington, Iowa.
- 1894. Platycrinus discoideus. Keyes, Mo. Geol. Surv., vol. 4, p. 197. Lower Burlington L. S.: Hannibal, Louisiana, and Sedalia, Missouri.
- 1897. Platycrinus discrideus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 713, pl. 3, fig. 17; pl. 66, figs. 10a-c.

Lower Burlington L. S.: Burlington, Iowa; Missouri; New Mexico.

Also see Eucladocrinus pleurovimenus.

# Platycrinus douglassi Miller and Gurley.

1896. Platycrinus douglassi. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 86, pl. 5, figs. 18, 19,

Subcarboniferous: Bridger Mountains, Bozeman, Montana.

## Platycrinus elegans Hall.

- 1861. Platycrinus elegans. Hall, Desc. New Spec. Crin., p. 4. Burlington L. S.
- 1861. Platycrinus elegans. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 285. Burlington L. S.: Burlington, Iowa.
- 1872. Platycrinus elegans. Hall, Photo. Plates of Crinoids, pl. 2, fig. 15.
- 1893. Platycrinus elegans. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 3, pl. 3, fig. 1.

Burlington L. S.: Burlington, Iowa.

## Platycrinus eminulus Hall.

- \*1861. Platyorinus eminulus. Hall, Desc. New Spec. Crin., p. 17. Burlington L. S.
- 1897. Platycrinus eminulus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 712, pl. 68, figs. 13a-c.

Lower Burlington L. S.: Burlington, Iowa.

#### Platycrinus excavatus Hall.

- 1861. Platycrinus excavatus. Hall, Desc. New Spec. Crin., p. 4. Burlington L. S.
- 1861. Platycrinus excavatus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 286. Burlington L. S.: Burlington, Iowa.
- 1872. Platycrinus excavatus. Hall, Photo. Plates of Crinoids, pl. 2, fig. 1.
- 1891. Platycrinus sulcatus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 16, pl. 2, fig. 2. Burlington Group: Sedalia, Missouri.
- 1893. Platycrinus excavatus. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 3, pl. 3, fig. 5.
  - Burlington L. S.: Burlington, Iowa.

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#### Platycrinus excavatus Hall—Continued.

1897. Platycrinus excavatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 718, pl. 66, fig. 4.

Lower Burlington L. S.: Burlington, Iowa.

Platycrinus exsertus. See Platycrinus burlingtonensis.

## Platycrinus faberi Miller.

1889. Platyorinus faberi. Miller, N. A. Geol. and Pal., p 270, fig. 393. St. Louis or Kaskaskia Group: Scott County, West Virginia.

## Platycrinus formosus Miller and Gurley.

1895. Platycrinus formosus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 72, pl. 4, figs. 20, 21.

Burlington Group: Sedalia, Missouri.

# Platyerinus formosus var. approximatus Miller and Gurley.

1896. Platycrinus formosus var. approximatus. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 60, pl. 4, figs. 8-11.
Burlington Group, Sedalia, Missouri.

## Platverinus geometricus Wachsmuth and Springer.

1897. Platycrinus geometricus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 697, pl. 67, fig. 10; pl. 68, fig. 8.

Upper Burlington L. S.: Burlington, Iowa.

## Platycrinus georgii. See Platycrinus saræ.

## Platycrinus germanus Miller and Gurley.

1895. Platycrinus germanus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 78, pl. 4, figs. 46, 47.

Chouteau Group: Sedalia, Missouri.

#### Platycrinus glyptus Hall.

\*1861. Platycrinus glyptus. Hall, Desc. New Spec. Crin., p. 16. Burlington L. S.

1897. Platycrinus glyptus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 693, pl. 67, figs. 4, 5.

Upper Burlington L. S.: Burlington, Iowa.

#### Platycrinus gorbyi Miller.

1891. Platycrinus Gorbyi. Miller, Bull. Geol. Surv. Mo., No. 4, p. 15, pl. 1, fig. 14. Burlington L. S.: Sedalia, Missouri.

1897. Platyerinus Gorbyi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 716, pl. 68, fig. 15.

Lower Burlington L. S.: Burlington, Iowa; Sedalia, Missouri.

## Platycrinus graphicus Hall.

1864. Platycrinus graphicus. Hall, 17th Rep. N. Y. State Cab. Nat. Hist., p. 55. Waverly Group: Richfield, Ohio.

1875. Platycrinus graphicus. Hall and Whitfield, Pal. Ohio, vol. 2, p. 166, pl. 11, fig. 2.

Waverly Group: Richfield, Ohio.

1875. Platycrinus Richfieldensis. Hall and Whitfield, Pal. Ohio, vol. 2, p. 167, pl. 11, fig. 1.

Waverly Group: Richfield, Ohio.

1897. Platycrinus graphicus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 672, pl. 71, fig. 7.

Waverly Group: Richfield, Ohio.

## Platycrinus halli Shumard.

1858. Platyorinus planus? Hall, Geol. Iowa, vol. 1, pt. 2, p. 533, pl. 8, figs. &c., b. (Not P. planus O. and S. 1850.)

Burlington L. S.: Burlington, Iowa.

#### Pinnatopora conferta Ulrich.

1890. Pinnatopora conferta. Ulrich, Geol. Surv. Ill., vol. 8, p. 618, pl. 56, fig. 5; pl. 66, fig. 6.

Keokuk Group: Keokuk, Iowa; Otter Creek, Jersey County, Illinois. 1894. Pinnatopora conferta. Keyes, Mo. Geol. Surv., vol. 5, p. 31.

Keokuk L. S. : Keokuk, Iowa.

## Pinnatopora curvata Ulrich.

1888. Pinnatopora curvata. Ulrich, Bull. Den. Univ., vol. 4, p. 76, pl. 14, fig. 4. Cuyahoga Shale: Richfield, Ohio.

#### Pinnatopora flexuosa Ulrich.

1890. Pinnatopora flexuosa. Ulrich, Geol. Surv. Ill., vol. 8, p. 617, pl. 66, figs. 4-4c. Keokuk Group: King's Mountain, Kentucky.

## Pinnatopora intermedia Ulrich.

1888. Pinnatopora intermedia. Ulrich, Bull. Den. Univ., vol. 4, p. 74, pl. 14, fig. 1. Cuyahoga Shale: Richfield. Ohio.

1888. Pinnatopora intermedia. Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 37. Waverly Group: Ohio.

## Pinnatopora minor Ulrich.

1888. Pinnatopora minor. Ulrich, Bull. Den. Univ., vol. 4, p. 77, pl. 14, figs. 7, 7a. Cnyshoga Shale: Richfield, Ohio.

## Pinnatopora nereidis White.

1874. Glauconome nereidis. White, Prelim. Rep. Inv. Foss., p. 18.
Carboniferous: White Mountain and Black rivers, Arizona.

1877. Glauconome nercidis. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 105, pl. 7, figs. 5a-c.

Carboniferous: Confluence of White Mountain and Black rivers, Arizona.

#### Pinnatopora simulatrix Ulrich.

1888. Pinnatopora simulatrix. Ulrich, Bull. Den. Univ., vol. 4, p. 75, pl. 14, fig. 3. Cuyahoga Shale: Richfield, Ohio.

#### Pinnatopora striata Ulrich.

1890. Pinnatopora striata. Ulrich, Geol. Surv. Ill., vol. 8, p. 617, pl. 66, fig. 4d. Keokuk Group: Bentonsport, Iowa.

## Pinnatopora subangulata Ulrich.

1888. Pinnatopora subangulata. Ulrich, Bull. Den. Univ., vol. 4, p. 76, pl. 14, fig. 2. Cuyahoga Shale: Cuyahoga Falls, Ohio.

#### Pinnatopora tenuiramosa Ulrich.

1888. *Pinnatopora tenuiramosa*. Ulrich, Bull. Den. Univ., vol. 4, p. 79. Cuyahoga Shale: Richtield, Ohio.

1890. Pinnatopora tenuiramosa. Ulrich, Geol, Surv. Ill., vol. 8, p. 619, pl. 66, fig. 7. Waverly Group: Near Richfield, Ohio.

#### Pinnatopora trilineata Meek.

1872. Glauconome trilincata. Meek, U. S. Geol, Surv. Nebr., p. 157, pl. 7, figs. 4a-d. Upper Coal Measures: Nebraska City, Nebraska.

1890. Pinnatopora trilineata. Ulrich, Geol. Surv. Ill., vol. 8, p. 620, pl. 66, fig. 6. Upper Coal Measures: Sangamon County, Illinois.

1894. Pinnatopora trilineata. Keyes, Mo. Geol. Surv., vol. 5, p. 31. Upper Coal Measures: Kansas City, Missouri.

#### Pinnatopora vinei Ulrich.

1888. Pinnatopora vinci. Ulrich, Bull. Den. Univ., vol. 4, p. 77, pl. 14, fig. 5. Cuyahoga Shale: Richfield, Lodi, and Bagdad, Ohio. Keokuk Group: King's Mountain, Kentucky; Keokuk, Iowa.

## Platycrinus huntsvillæ Troost, MS.—Continued.

1892. Platycrinus alabamensis. Miller, 17th Rep. Geol. Surv. Ind., p. 660, pl. 9, fig. 5.

Subcarboniferous: Huntsville, Alabama.

1897. Platycrinus Huntsrillæ. Wachsmuth and Springer, N. Am. Crin. Cam., p. 678, pl. 73, figs. 6, 7a, b, 8-12.

St. Louis L. S.: Huntsville, Alabama; Hardin County, Illinois.

## Platverinus illinoisensis Miller and Gurley.

1896. Platycrinus illinoisensis. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 62, pl. 5, figs. 5-7.

Burlington Group: Adams County, Illinois.

#### Platycrinus incomptus White.

\*1860. Platycrinus incomptus. White, Jour. Bost. Soc. Nat. Hist, vol. 7, p. 503. Burlington L. S.: Burlington, Iowa.

1873. Platycrinites incomptus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 459, pl. 3, fig. 7.

Burlington L. S.: Burlington, Iows.

1897. Platycrinus incomptus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 664, pl. 71, figs. 1-3; pl. 67, fig. 6.

Upper Burlington L. S.: Burlington, Iowa.

## Platycrinus inornatus. See Platycrinus burlingtonensis.

## Platycrinus insolens Rowley and Hare.

1891. Platycrinus insolons. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 98, pl. 2, fig. 4.

Chouteau L. S.: 3 miles southeast of Curryville, Missouri.

1897. Platycrinus insolens. Wachsmuth and Springer, N. Am. Crin. Cam., p. 659, pl. 71, fig. 15.

Chouteau L. S.: Near Curryville, Missouri.

#### Platycrinus lautus. See Platycrinus burlingtonensis.

## Platycrinus lodensis Hall and Whitfield.

1875. Platycrinus Lodensis. Hall and Whitfield, Pal. Ohio, vol. 2, p. 168, pl. 11, fig. 3.

Cuyahoga Shale: Medina County, Ohio.

1897. Platycrinus lodensis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 666, pl. 71, fig. 6.

Cuyahoga Shale: Lodi and Royalton, Ohio.

#### Platycrinus marginatus Rowley and Hare.

1891. Platycrinus marginatus. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 98, pl. 2, fig. 3.

Upper Burlington L. S.: Spencer Creek, 2 miles north of Curryville, Missouri.

## Platycrinus missouriensis Miller and Gurley.

1895. Platycrinus missourionsis Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 73, pl. 4, figs. 22, 23.

Chouteau L. S.: Near Sedalia, Missouri.

#### Platycrinus modestus Miller and Gurley.

1895. Platycrinus modestus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 77, pl. 4, figs. 43-45.

Burlington Group: Sedalia, Missouri.

## Platycrinus monroensis. See Platycrinus saræ.

Platycrinus montanensis. See Eucladocrinus montanensis.

Platycrinus multibrachiatus. See Platycrinus discoideus.

#### Platverinus niotensis Meek and Worthen.

1865. Platycrinus Niotensis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 162. Keokuk L. S.: Niota, Hancock County, Illinois.

1868. Platycrinus Niotensis. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 513. pl. 20, fig. 3.

Keokuk L. S.: Niota, Hancock County, Illinois.

1897. Platycrinus niotensis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 682, pl. 71, fig. 9.

Keokuk Group: Niota, Illinois; Indian Creek and Canton, Indiana.

Platycrinus nodobrachiatus. See l'latycrinus burlingtonensis.

## Platycrinus nodostriatus Wachsmuth and Springer.

1897. Platycrinus nodo-striatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 698, pl. 66, figs. 5a, b; pl. 70, figs. 3, 4a-c. Upper Burlington L. S.: Burlington, Iowa.

Platycrinus nodulosus. See Platyceras ornogranulus.

Platycrinus nucleiformis. See Platycrinus burlingtonensis.

Platycrinus occidentalis. See Eucladocrinus tuberosus.

Platycrinus olla. See Platycrinus halli.

## Platycrinus ollicula Miller.

1891. Platycrinus ollicula. Miller, Bull. Geol. Surv. Mo., No. 4, p, 19, pl. 2, figs. 7, 8.

Chouteau Group: Pin Hook Bridge and at Leucke's Quarry, near Sedalia. Missouri.

1894. Platycrinus ollicula. Keyes, Mo. Geol. Surv., vol. 4, p. 195.

Chouteau L. S.: Sedalia, Missouri.

1897. Platycrinus ollicula. Wachsmuth and Springer, N. Am. Crin. Cam., p. 667. Chouteau L. S.: Pin Hook Bridge and at Leucke's Quarry, near Sedalia, Missouri.

## Platycrinus ornogranulus McChesney.

1858. Platycrinus nodulosus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 541. (Not P. nodulosus Goldfuss, 1833.)

Burlington L. S.: Burlington, Iowa.

1860. Platycrinus ornogranulus. McChesney, Desc. New Pal. Foss., p. 5. Burlington L. S.: Burlington, Iowa.

1865. Platycrinus ornogranulus. McChesney, Ill. New Spec. Foss., pl. 2, figs. 11a, b.

1868. Platycrinus ornigranulus. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 3, pl. 5, fig. 8.

Burlington L. S.: Burlington, Iowa.

1897. Platycrinus ornigranulus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 701, pl. 66, fig. 8; pl. 68, figs. 10a-c, 11a, b, 12a, b. Lower Burlington L. S.: Burlington, Iowa.

Platycrinus oweni. See Platycrinus regalis.

## Platycrinus parvinodus Hall.

\*1861. Platycrinus parvinodus. Hall, Desc. New Spec. Crin., p. 17.

Burlington L. S.

1897. Platyorinus parvinodus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 696, pl. 68, figs. 6a, b.

Lower Burlington L. S.: Burlington, Iowa.

## Platycrinus parvulus Meek and Worthen.

1865. Platycrinus parvulus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 163.

Chester Group: Pope County, Illinois.

## Platycrinus parvulus Meek and Worthen—Continued.

1873. Platycrinites parvulus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 555, pl. 20 fig 7.

Chester Group: Pope County, Illinois.

## Platycrinus peculiaris Wachsmuth and Springer.

1897. Platyorinus peculiaris. Wachsmuth and Springer, N. Am. Crin. Cam., p. 700, pl. 68, figs. 7a, b

Lower Burlington L. S.: Lake Valley, New Mexico.

Platycrinus penicillus. See Platycrinus huntsvillæ.

# Platycrinus pentagonus Miller.

1891. Platycrinus pentagonus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 16, pl. 2, fig. 1.

Keokuk Group: Boonville, Missouri.

Platycrinus perasper. See Platycrinus yandelli var. perasper.

## Platycrinus pettisensis Miller and Gurley.

1895. Platyorinus pettisensis. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 73, pl. 4, figs. 24, 25.
Chouteau L. S.: Near Sedalia, Missouri.

## Platycrinus pileiformis Hall.

1858. Platycrinus pileiformis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 529, pl. 8, figs. 3a-c. Burlington L. S.: Burlington, Iowa.

1891. Platycrinus carchesium. Miller, Bull. Geol. Surv. Mo., No. 4, p. 23, pl. 3, figs. 6, 7.

Burlington Group: Sedalia, Missouri.

1894. Platycrinus pileiformis. Keyes, Mo. Geol. Surv., vol. 4, p. 198, pl. 25, fig. 5. Lower Burlington L. S.: Sedalia and Hannibal, Missouri; Kinderhook, Illinois.

1897. Platycrinus pileiformis. Wachsmuth and Springer, N. Am. Crin., p. 656, pl. 69, fig. 5; pl. 70, figs. 13a, b.

Lower Burlington L. S.: Burlington, Iowa; Sedalia and Hannibal, Missouri.

## Platycrinus pisum Rowley and Hare.

1891. Platycrinus pisum. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 113, pl. 3, fig. 3.

Lower Burlington L. S.: Louisiana, Missouri.

1897. Platycrinus pisum. Wachsmuth and Springer, N. Am. Crin. Cam., p. 660, pl. 71, figs. 13a, b.
Lower Burlington L. S.: Louisiana, Missouri.

Platycrinus planobasalis. See Platycrinus quinquenodus.

## Platycrinus planus Owen and Shumard.

1850. Platycrinus planus. Owen and Shumard, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 57, pl. 7, figs. 4a-c.

Subcarboniferous: Burlington, Iowa.

1852. Platycrinus planus. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 587, tab. 5A, figs. 4a-c.
Subcarboniferous L. S.: Burlington, Iowa; Button-mould Knob, Kentucky.

1873. Platycrinites planus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 452, pl. 3, figs. 5a, c. (not b. = P. pratteni.)

Burlington L.S.: (Burlington, Iowa).

1880. Platycrinus bloomfieldensis. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 2, p. 257, pl. 15, fig. 4.

Keokuk Group: New Bloomfield, Missouri.

## Platycrinus planus Owen and Shumard—Continued.

1897. Platyorinus planus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 668, pl. 69, figs. 2a-d.

Lower Burlington L. S.: Burlington, Iowa; Hannibal and Sedalia, Missouri.

Also see Platycrinus halli, Platycrinus pratteni, and Platycrinus agassizi.

# Platycrinus plenus. See Platycrinus huntsvillæ.

Platycrinus pleurovimenus. See Eucladocrinus pleurovimenus.

## Platycrinus pocilliformis Hall.

1858. Platycrinus pocilliformis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 528, pl. 8, figs. 2a, b.

Burlington L. S.: Burlington, Iowa.

1897. Platycrinus pocilliformis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 706, pl. 68, figs. 2a, b.

Lower Burlington L. S.: Burlington, Iowa.

## Platycrinus poculum Miller.

1881. Platycrinus poculum. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 4, p. 311, pl. 7, fig. 4.

Subcarboniferous: Lake Valley Mining District, New Mexico.

Platycrinus prænuntius. See Eucladocrinus prænuntius.

Platycrinus prattenanus. See Platycrinus saræ.

## Platycrinus pratteni Worthen.

1868. Platycrinus planus? Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 467, pl. 16, fig. 6.

Burlington Group: Burlington, Iowa.

1860. Platycrinus Pratteni. Worthen, Trans. St. Louis Acad. Sci., vol. 1, p. 569. Brown Crinoidal L. S.: Burlington, Iowa.

1894. Platycrinus prattoni. Keyes, Mo. Geol. Surv., vol. 4, p. 198. Lower Burlington L. S.: Sedalia, Missouri.

1897. Platycrinus Pratteni. Wachsmuth and Springer, N. Am. Crin. Cam., p. 671, pl. 70, figs. 11, 12.

Lower Burlington L. S.: Burlington, Iowa.

## Platycrinus pulchellus. See Platycrinus discoideus.

#### Platycrinus pumilis Hall.

1860. Platyorinus pumilis. Hall, Supp., vol. 1, pt. 2, Geol. Rep. Ia., p. 82, pl. 1, fig. 6.

Warsaw L. S.: Warsaw, Illinois.

## Platycrinus quinquenodus White.

1862. Platyorinus quinquenodus. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 18.
Upper Burlington L. S.: Burlington, Iowa.

1891. Platycrinus plano-basalis. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 97, pl. 2, fig. 1.

Upper Burlington L. S.: Spencer Creek, 2 miles north of Curryville, Missouri.

1897. Platycrinus quinquenodus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 661, pl. 71, figs. 14a-c. Upper Burlington L. S.: Burlington, Iowa.

#### Platycrinus regalis Hall.

\*1861. Platycrinus regalis. Hall, Desc. New Spec. Crin., p. 16. Burlington L. S.

## Platycrinus regalis Hall—Continued.

- 1861. Platycrinus Oweni. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 128. Burlington L. S.: Burlington, Iowa.
- 1872. Platycrinus regalis. Hall, Photo. Plates of Crinoids, pl. 2, fig. 6.
- 1897. Platyorinus regalis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 710, pl. 72, figs. 1, 2.

Lower Burlington L. S.: Burlington, Iowa.

#### Platycrinus richfieldensis. See Platycrinus graphicus.

Platycrinus rotundus. See Platycrinus sculptus.

## Platycrinus saffordi Hall.

- 1858. Platycrinus saffordi. Hall, Geol. Iowa, vol. 1, pt. 2, p. 634, pl. 18, figs. 5, 6. Keokuk L. S.: Warsaw, Illinois.
- 1894. Platycrinus saffordi. Keyes, Mo. Geol. Surv., vol. 4, p. 202, pl. 25, tig. 1. Keokuk L. S.: Wayland, Missouri; Warsaw, Illinois.
- 1897. Platycrinns Saffordi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 694, pl. 67, figs. 1-3.
  - Upper Burlington L. S. and Keokuk Group: Indian Creek, Montgomery County, Indiana; Keokuk, Iowa; Kentucky; Tennessee; Illinois; Missouri.

## Platycrinus sampsoni Miller.

- 1891. Platycrinus Sampsoni. Miller, Bull. Geol. Surv. Mo., No. 4, p. 13, pl. 1, fig. 11.
  Burlington Group: Near Sedalia, Missouri.
- 1894. Platycrinus sampsoni. Keyes, Mo. Geol. Surv., vol. 4, p. 199.
  Burlington L. S.: Ash Grove and Sedalia, Missouri; Burlington, Iowa.
- 1897. Platycrinus Sampsoni. Wachsmuth and Springer, N. Am. Crin. Cam., p. 673, pl. 70, fig. 10.

Upper Burlington L. S.: Burlington, Iowa; Sedalia, Missouri.

#### Platycrinus sarse Hall.

- 1858. Platyorinus sara. Hall, Geol. Iowa, vol. 1, pt. 2, p. 673, pl. 17, fig. 4. St. Louis L. S.: Near St. Louis, Missouri.
- 1860. Platycrinus georgii. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, p. 82, pl. 1, fig. 7.

Warsaw L. S.: Warsaw, Illinois.

1860. Platycrinus Prattenanus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 379.

St. Louis L. S.: Randolph County, Illinois.

1866. Platycrinus Prattenanus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 264, pl. 20, fig. 2.

St. Louis Group: Randolph County, Illinois.

- 1882. Platycrinus monroensis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 30.
  - St. Louis L. S.: Monroe County, Illinois; Blount County, Tennessee.
- 1883. Platycrinus Monroeneis. Worthen, Geol. Surv. Ill., vol. 7, p. 306, pl. 30, fig. 9. St. Louis L. S.: Monroe County, Illinois; Blount County, Tennessee.
- 1894. Platycrinus sara. Keyes, Mo. Geol. Surv., vol. 4, p. 202. St. Louis L. S.: St. Louis, Missouri.
- 1897. Platycrinus Saræ. Wachsmuth and Springer, N. Am. Crin. Cam., p. 677, pl. 69, fig. 7; pl. 70, fig. 1.
  St. Louis Group: St. Louis, Missouri; Jersey County, Illinois.

## Platycrinus scobina Meek and Worthen.

- 1861. Platyorinus scobina. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 129. Burlington L. S.: Burlington, Iowa.
- Platycrinus clytis. Hall, Desc. New Spec. Crin., p. 4.
   Burlington L. S.

#### Platycrinus scobina Meek and Worthen—Continued.

1861. Platycrinus clytis. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 285.

Burlington L. S.: Burlington, Iowa.

1868. Platycrinus scobina. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 466, pl. 16, fig. 9.

Burlington Group: Burlington, Iowa.

1872. Platycrinus clytis. Hall, Photo. Plates of Crinoids, pl. 2, fig. 4.

1893. Platycrimus clytis. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 2, pl. 3, fig. 6.

Burlington L. S.: Burlington, Iowa.

1897. Platycrinus scobina. Wachsmuth and Springer, N. Am. Crin. Cam., p. 695, pl. 68, figs. 14a, b.
Lower Burlington L. S.: Burlington, Iowa.

## Platycrinus sculptus Hall.

1858. Platyorinus sculptus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 536, pl. 8, fig. 11. Burlington L. S.: Burlington, Iowa.

1891. Platycrinus rotundus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 20, pl. 2, figs. 11, 12.
Burlington Group: Sedalia, Missouri.

1894. Platycrinus sculptus. Keyes, Mo. Geol. Surv., vol. 4, p. 200. Lower Burlington L. S.: Sedalia, Missouri.

1897. Platycrinus sculptus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 691, pl. 68, fig. 5; pl. 75, figs. 8, 9.

Lower Burlington L. S.: Burlington, Iowa.

#### Platycrinus semifusus Miller and Gurley.

1895. Platycrinus semifusus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 77, pl. 4, figs. 41, 42.
Burlington Group: Sedalia, Missouri.

Darington droup! Sounds, Massoulli.

## Platycrinus sharonensis Miller and Gurley.

1897. Platycrinus sharonensis. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 42, pl. 3, figs. 6, 7.

Burlington Group: Near Sharon, Missouri.

## Platycrinus shumardanus. See Playtycrinus discoideus.

## Platycrinus spinifer Wachsmuth and Springer.

1897. Platycrinus spinifer. Wachsmuth and Springer, N. Am. Crin. Cam., p. 708, pl. 66, fig. 7.

Lower Burlington L. S.: Burlington, Iowa.

## Playtycrinus spinifer var. elongatus Wachsmuth and Springer.

1897. Platycrinus spinifer var. slongatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 709, pl. 67, fig. 7.

Lower Burlington L. S.: Burlington, Iowa.

# Platycrinus striobrachiatus. See Platycrinus corrugatus.

# Platycrinus subscitulus Miller and Gurley.

1896. Platycrinus subscitulus. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 62, pl. 4, figs. 12-15.

Burlington Group: Sedalia, Missouri.

# Platycrinus subspinosus Hall.

1858. Platyorinus subspinosus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 536, pl. 8, figs. 9, 10. Burlington L. S.: Burlington, Iowa.

1866. Platycrinus subspinosus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 173, pl. 15, fig. 6.

Burlington L. S.: Burlington, Iowa.

## Platycrinus suospinosus Hall—Continued.

1873. Platycrinites subspinosus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 452, pl. 11, fig. 2.

Burlington L. S.: Burlington, Iowa.

1894. Platycriaus subspinosus. Keyes, Mo. Geol. Surv., vol. 4, p. 197.

Lower Burlington L. S.: Louisiana and Sedalia, Missouri.

1897. Platyorinus subspinosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 717, pl. 66, figs. 9a, b.
Lower Burlington, L. S.: Burlington, Iowa; Lake Valley, New Mexico.

## Platverinus subspinulosus Hall.

1860. Platycrinus subspinulosus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, p. 81, Burlington L. S.: Burlington, Iowa.

1897. Platycrinus subspinulosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 684, pl. 66, figs. 2a, b; pl. 70, fig. 9.
Upper Burlington L. S.: Burlington, Iowa.

Platycrinus sulcatus. See Platycrinus excavatus.

## Platycrinus sulciferus Miller and Gurley.

1895. Platycrinus sulciferus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 75, pl. 4, figs. 33, 34.
Burlington Group: Sedalia, Missouri.

## Platycrinus symmetricus Wachsmuth and Springer.

1890. Platycrinus symmetricus. Wachsmuth and Springer, Geol. Surv. Ill., vol. 8, p. 186, pl. 15, fig. 8.

Kinderhook Group: Le Grand, Iowa.

1897. Platyorinus symmetricus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 655, pl. 3, fig. 16; pl. 69, figs. 1a-c. Kinderhook Group: Le Grand, Marshall County, Iowa.

## Platycrinus tenuibrachiatus Meek and Worthen.

1869. Platycrinites tenuibrachiatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 168.

Upper Burlington L. S.: Burlington, Iowa.

1873. Platycrinites tenuibrachiatus. Meek and Worthen, Geol. Surv. Ill., vol 5, p. 450, pl. 3, fig. 4.

Burlington L. S.: Burlington, Iowa.

1897. Platycrinus tenuibrachiatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 687, pl. 70, figs. 7, 8.
Upper Burlington L. S.: Burlington, Iowa.

#### Platverinus truncatulus Hall.

1858. Platycrinus truncatulus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 538. Burlington L. S.: Burlington, Iowa.

1897. Piatycrinus truncatulus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 675, pl. 67, figs. 11a, b; pl. 71, figs. 18a, b. Lower Burlington L. S.: Burlington, Iowa.

Platycrinus truncatus. Sce Platycrinus americanus.

Platycrinus tuberosus. See Eucladocrinus tuberosus.

## Platycrinus tugurium Miller and Gurley.

1895. Platyorinus tugurium. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 70, pl. 4, figs. 17-19.

Burlington L. S.: Sedalia, Missouri.

## Platycrinus vascellum Miller and Gurley.

1895. Platycrinus vascellum. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 32, pl. 2, figs. 17, 18.

Keokuk Group: Tennessee.

#### Platverinus discoideus Owen and Shumard-Continued.

1852. Platycrinus corrugatus. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 289, tab. 5 A, figs. 2a-e.

Subcarboniferous L. S.: Burlington, Iowa.

- 1858. Platyorinus shumardanus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 532, pl. 8, fig. 5. Burlington L. S.: Burlington, Iowa.
- Platyorinus etriobrachiatus. Hall, Desc. New Crin., p. 4.
   Burlington L. S.
- 1861. Platyorinus striobrachiatus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 287. Burlington L. S.: Burlington, Iowa
- 1861. Platycrinus multi-brachiatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 135.

Burlington L. S.: Burlington, Iowa.

- 1872. Platyorinus striobrachiatus. Hall, Photo. Plates of Crinoids, pl. 2, figs. 2, 3.
- 1891. Platycrinus pulcellus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 11, pl. 1, fig. 7. Burlington Group: Near Sedalia, Missouri.
- 1893. Platycrinus striobrachiatus. Whitneld, Mem. Am. Mus. Nat. Hist., vol. 1, p. 4, pl. 3, figs. 2-4.
  Burlington L. S.: Burlington, Iowa.
- 1894. Platycrinus discoideus. Keyes, Mo. Geol. Surv., vol. 4, p. 197.

  Lower Burlington L. S.: Hannibal, Louisiana, and Sedalia, Missouri.
- 1897. Platycrinus discoideus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 713, pl. 3, fig. 17; pl. 66, figs. 10a-c.

Lower Burlington L. S.: Burlington, Iowa; Missouri; New Mexico.

Also see Bucladocrinus pleurovimenus.

# Platycrinus douglassi Miller and Gurley.

1896. Platycrinus douglassi. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 86, pl. 5, figs. 18, 19.
Subcarboniferous: Bridger Mountains, Bozeman, Montana.

# Platycrinus elegans Hall.

- 1861. Platycrinus elegaus. Hall, Desc. New Spec. Crin., p. 4.
  Burlington L. S.
- 1861. Platyorinus elegans. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 285.
  Burlington L. S.: Burlington, Iowa.
- 1872. Platycrinus elegans. Hall, Photo. Plates of Crinoids, pl. 2, fig. 15.
- 1893. Platycrinus elegans. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 3, pl. 3, fig. 1.

Burlington L. S.: Burlington, Iowa.

#### Platycrinus eminulus Hall.

- \*1861. Platycrinus eminulus. Hall, Desc. New Spec. Crin., p. 17. Burlington L. S.
  - 1897. Platycrinus eminulus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 712, pl. 68, figs. 13a-c.
    Lower Burlington L. S.: Burlington, Iowa.

## Platycrinus excavatus Hall.

- 1861. Platycrinus excavatus. Hall, Desc. New Spec. Crin., p. 4. Burlington L. S.
- 1861. Platycrinus excavatus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 286. Burlington L. S.: Burlington, Iowa.
- 1872. Platycrinus excavatus. Hall, Photo. Plates of Crinoids, pl. 2, fig. 1.
- 1891. Playerinus sulcatus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 16, pl. 2, fig. 2. Burlington Group: Sedalia, Missouri.
- 1893. Platycrinus excavatus. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 3, pl. 3, fig. 5.

  Burlington L. S.: Burlington, Iowa.

## Platycrinus excavatus Hall—Continued.

1897. Platyorinus excavatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 71. pl. 66, fig. 4.

Lower Burlington L. S.: Burlington, Iowa.

Platycrinus exsertus. See Platycrinus burlingtonensis.

#### Platycrinus faberi Miller.

1889. Platyorinus faberi. Miller, N. A. Geol. and Pal., p 270, fig. 393. St. Louis or Kaskaskia Group: Scott County, West Virginia.

#### Platycrinus formosus Miller and Gurley.

1895. Platycrinus formosus. Miller and Gurley, Bull. No. 7, Ill. State Mus. N: Hist., p. 72, pl. 4, figs. 20, 21.

Burlington Group: Sedalia, Missouri.

## Platycrinus formosus var. approximatus Miller and Gurley.

1896. Platycrinus formosus var. approximatus. Miller and Gurley, Bull. No. 9, I State Mus. Nat. Hist., p. 60, pl. 4, figs. 8-11.

Burlington Group, Sedalia, Missouri.

## Platycrinus geometricus Wachsmuth and Springer.

1897. Platycrinus geometricus. Wachsmuth and Springer, N. Am. Crin. Can p. 697, pl. 67, fig. 10; pl. 68, fig. 8.

Upper Burlington L. S.: Burlington, Iowa.

## Platycrinus georgii. See Platycrinus saræ.

## Platycrinus germanus Miller and Gurley.

1895. Platycrinus germanus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Na Hist., p. 78, pl. 4, figs. 46, 47.

Chouteau Group: Sedalia, Missouri.

## Platycrinus glyptus Hall.

\*1861. Platyorinus glyptus. Hall, Desc. New Spec. Crin., p. 16.
Burlington L. S.

1897. Platycrinus glyptus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 69 pl. 67, figs. 4, 5.
Upper Burlington L. S.: Burlington, Iowa.

#### Platverinus gorbvi Miller.

1891. Platycrinus Gorbyi. Miller, Bull. Geol. Surv. Mo., No. 4, p. 15, pl. 1, fig. 14. Burlington L. S.: Sedalia, Missouri.

1897. Platyorinus Gorbyi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 71 pl. 68, fig. 15.

Lower Burlington L. S.: Burlington, Iowa; Sedalia, Missouri.

## Platycrinus graphicus Hall.

1864. Platycrinus graphicus. Hall, 17th Rep. N. Y. State Cab. Nat. Hist., p. 55. Waverly Group: Richfield, Ohio.

1875. Platycrinus graphicus. Hall and Whitfield, Pal. Ohio, vol. 2, p. 166, pl. 1 fig. 2.

Waverly Group: Richfield, Ohio.

1875. Platycrinus Richfieldensis. Hall and Whitfield, Pal. Ohio, vol. 2, p. 167, pl. 1 fig. 1.

Waverly Group: Richfield, Ohio.

1897. Platycrinus graphicus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 67 pl. 71, fig. 7.

Waverly Group: Richfield, Ohio.

## Platycrinus halli Shumard.

1858. Platyorinus planus? Hall, Geol. Iowa, vol. 1, pt. 2, p. 533, pl. 8, figs. 6a, (Not P. planus O. and S. 1850.)

Burlington L. S.: Burlington, Iowa.

## Platycrinus halli Shumard—Continued.

- 1861. Platycrinus olla. Hall, Desc. New Spec. Crin., p. 16. (Not P. olla De Koninck and Lehon.)
  - Burlington L. S.
  - 1866. Platycrinus Halli. Shumard, Trans. St. Louis Acad. Sci., vol. 2, p. 388.
  - 1873. Platycrinites Hallif Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 454, pl. 3,
    - Burlington, L. S.: Burlington, Iowa.
  - 1394. Platycrinus halli. Keyes, Mo. Geol. Surv., vol. 4, p. 201, pl. 25, fig. 3. Upper Burlington L. S.: Ash Grove, Missouri; Burlington, Iowa.
  - 1897. Platyorinus Halli. Wachsmuth and Springer, N. Am. Crin. Cam., p. 662. pl. 72, figs. 6a, b; 7a, b.
    - Upper Burlington L. S.: Burlington, Iowa.

## Platycrinus haydeni Meek.

1873. Platycrinites Haydeni. Meek, U. S. Geol. Surv. Mont., Idaho, Wyo., and Utah, p. 469.

Carboniferous: "Old Baldy," near Virginia City, Montana.

1880. Platycrinus kaydeni. White, Cont. to Inv. Pal. No. 6, p. 122, pl. 33, fig. 7a. Carboniferous: "Old Baldy" Mountain, near Virginia City, Montana.

## Platycrinus hemisphericus Meek and Worthen.

1865. Platycrinus hemisphæricus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., р. 162.

Keokuk Group: Crawfordsville, Indiana.

1868. Platycrinus hemisphæricus. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 511, pl. 20, figs. 2a, b.

Keokuk Group: Crawfordsville, Indiana.

1873. Platycrinites hemisphericus. Meek and Worthen, Geol. Surv. Ill., vol. 5. p. 506, pl. 16, figs. 6a-c. Keokuk Group: Crawfordsville, Indiana.

1882. Platycrinus hemisphericus. White, 11th Rep. Gool. Surv. Ind., p. 368, pl. 41,

Keokuk Group: Crawfordsville, Indiana.

1897. Platycrinus hemisphericus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 703, pl. 66, figs. 1a-d.

Keokuk Group: Crawfordsville, Indiana; Keokuk, Iowa.

# Platycrinus hodgsoni Miller and Gurley.

1896. Platycrinus hodgeoni. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 63, pl. 5, figs. 8, 9.

Burlington Group: Adams County, Illinois.

## Platycrinus huntsvillæ Troost, MS.

- 1849. Platycrinus Huntsvillas. Troost, Proc. Am. Ass. Adv. Sci., p. 61.
- 1860. Platycrinus penicillus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 380.
  - St. Louis L. S.: Hardin County, Illinois.
- 1860. Platycrinus plenus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 380. St. Louis L. S.: Hardin County, Illinois.
- 1866. Platycrinus penicillus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 266, pl. 19, figs. 6a-c.
  - St. Louis Group: Hardin County, Illinois.
- 1866. Platycrinus plenus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 267, pl. 20,
  - St. Louis Group: Hardin County, Illinois.
- 1891. Platycrinus alabamensis. Miller, Adv. Sheets, 17th Rep. Gool. Surv. Ind., p. 50, pl. 9, fig. 5.
  - Subcarboniferous: Huntsville, Alabama.

## Platycrinus huntsvillæ Troost, MS.—Continued.

1892. Platycrinus alabamensis. Miller, 17th Rep. Geol. Surv. Ind., p. 660, pl. 9, fig. 5.

Subcarboniferous: Huntsville, Alabama.

1897. Platyorinus Huntsrillæ. Wachsmuth and Springer, N. Am. Crin. Cam., p. 678, pl. 73, figs. 6, 7a, b, 8-12.

St. Louis L. S.: Huntsville, Alabama; Hardin County, Illinois.

## Platverinus illinoisensis Miller and Gurley.

1896. Platycrinus illinoisensis. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 62, pl. 5, figs. 5-7.

Burlington Group: Adams County, Illinois.

## Platycrinus incomptus White.

\*1860. Platycrinus incomptus. White, Jour. Bost. Soc. Nat. Hist, vol. 7, p. 503. Burlington L. S.: Burlington, Iowa.

1873. Platycrinites incomptus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 459, pl. 3, fig. 7.

Burlington L. S.: Burlington, Iowa.

1897. Platycrinus incomptus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 664, pl. 71, figs. 1-3; pl. 67, fig. 6.

Upper Burlington L. S.: Burlington, Iowa.

# Platycrinus inornatus. See Platycrinus burlingtonensis.

## Platycrinus insolens Rowley and Hare.

1891. Platycrinus insolens. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 98, pl. 2, fig. 4.

Chouteau L. S.: 3 miles southeast of Curryville, Missouri.

1897. Platycrinus insolens. Wachsmuth and Springer, N. Am. Crin. Cam., p. 659, pl. 71, fig. 15.

Chouteau L. S.: Near Curryville, Missouri.

## Platycrinus lautus. See Platycrinus burlingtonensis.

## Platycrinus lodensis Hall and Whitfield.

1875. Platycrinus Lodensis. Hall and Whitfield, Pal. Ohio, vol. 2, p. 168, pl. 11, fig. 3.

Cuyahoga Shale: Medina County, Ohio.

1897. Platycrinus lodensis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 666, pl. 71, fig. 6.

Cuyahoga Shale: Lodi and Royalton, Ohio.

## Platycrinus marginatus Rowley and Hare.

1891. Platycrinus marginatus. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 98, pl. 2, fig. 3.

Upper Burlington L. S.: Spencer Creek, 2 miles north of Curryville, Missouri.

#### Platverinus missouriensis Miller and Gurley.

1895. Platycrinus missouriensis Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 73, pl. 4, figs. 22, 23.

Chouteau L. S.: Near Sedalia, Missouri.

## Platycrinus modestus Miller and Gurley.

1895. Platycrinus modestus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 77, pl. 4, figs. 43-45.

Burlington Group: Sedalia, Missouri.

# Platycrinus monroensis. See Platycrinus saræ.

Platycrinus montanensis. See Eucladocrinus montanensis.

Platucrinus multibrachiatus. See Platycrinus discoideus.

## Platycrinus niotensis Meek and Worthen.

1865. Platycrinus Niotensis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 162. Keokuk L. S.: Niota, Hancock County, Illinois.

1868. Platycrinus Niotensis. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 513, pl. 20, fig. 3.

Keokuk L. S.: Niota, Hancock County, Illinois.

1897. Platycrinus niotensis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 682, pl. 71, fig. 9.

Keokuk Group: Niota, Illinois; Indian Creek and Canton, Indiana.

Platycrinus nodobrachiatus. See l'latycrinus burlingtonensis.

# Platyerinus nodostriatus Wachsmuth and Springer.

1897. Platycrinus nodo-striatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 698, pl. 66, figs. 5a, b; pl. 70, figs. 3, 4a-c. Upper Burlington L. S.: Burlington, Iowa.

Platycrinus nodulosus. See Platyceras ornogranulus.

Platycrinus nucleiformis. See Platycrinus burlingtonensis.

Platycrinus occidentalis. See Eucladocrinus tuberosus.

Platycrinus olla. See Platycrinus halli.

## Platycrinus ollicula Miller.

1891. Platycrinus ollicula. Miller, Bull. Geol. Surv. Mo., No. 4, p, 19, pl. 2, figs. 7, 8.

Chouteau Group: Pin Hook Bridge and at Leucke's Quarry, near Sedalia. Missouri.

1894. Platucrinus ollicula. Keyes, Mo. Geol. Surv., vol. 4, p. 195. Chouteau L. S.: Sedalia, Missouri.

1897. Platycrinus ollicula. Wachsmuth and Springer, N. Am. Crin. Cam., p. 667. Chonteau L. S.: Pin Hook Bridge and at Leucke's Quarry, near Sedalia, Missouri.

#### Platverinus ornogranulus McChesney.

1858. Platyorinus nodulosus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 541. (Not P. nodulosus Goldfuss, 1833.)

Burlington L. S.: Burlington, Iowa.

1860. Platycrinus ornogranulus. McChesney, Desc. New Pal. Foss., p. 5. Burlington L. S.: Burlington, Iowa.

1865. Platycrinus ornogranulus. McChesney, Ill. New Spec. Foss., pl. 2, figs. 11a,b. 1868. Platycrinus ornigranulus. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 3, pl. 5, fig. 8.

Burlington L. S.: Burlington, Iowa.

1897. Platyorinus ornigranulus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 701, pl. 66, fig. 8; pl. 68, figs. 10a-c, 11a, b, 12a, b. Lower Burlington L. S.: Burlington, Iowa.

Platycrinus oweni. See Platycrinus regalis.

## Platycrinus parvinodus Hall.

\*1861. Platycrinus parvinodus. Hall, Desc. New Spec. Crin., p. 17. Burlington L. S.

1897. Platyorinus parvinodus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 696, pl. 68, figs. 6a, b.

Lower Burlington L. S.: Burlington, Iowa.

## Platycrinus parvulus Meek and Worthen.

1865. Platycrinus parvulus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil.,

Chester Group: Pope County, Illinois.

#### Platycrinus parvulus Meek and Worthen-Continued.

1873. Platycrinites parvulus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 555, pl. 20 fig 7.

Chester Group: Pope County, Illinois.

## Platycrinus peculiaris Wachsmuth and Springer.

1897. Platycrinus peculiaris. Wachsmuth and Springer, N. Am. Crin. Cam., p. 700, pl. 68, figs. 7a, b

Lower Burlington L. S.: Lake Valley, New Mexico.

## Platycrinus penicillus. See Platycrinus huntsvillæ.

## Platycrinus pentagonus Miller.

1891. Platycrinus pentagonus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 16, pl. 2, fig. 1.

Keokuk Group: Boonville, Missouri.

## Platycrinus perasper. See Platycrinus yandelli var. perasper.

## Platycrinus pettisensis Miller and Gurley.

1895. Platyorinus pettisensis. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 73, pl. 4, figs. 24, 25.
Chouteau L. S.: Near Sedalia, Missouri.

## Platycrinus pileiformis Hall.

1858. Platycrinus pileiformis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 529, pl. 8, figs. 3a-c. Burlington L. S.: Burlington, Iowa.

1891. Platycrinus carchesium. Miller, Bull. Geol. Surv. Mo., No. 4, p. 23, pl. 3, figs. 6, 7.
Burlington Group: Sedalia, Missouri.

1894. Platycrinus pileiformis. Keyes, Mo. Geol. Surv., vol. 4, p. 198, pl. 25, fig. 5.

Lower Burlington L. S.: Sedalia and Hannibal, Missouri; Kinderhook,

1897. Platycrinus pileiformis. Wachsmuth and Springer, N. Am. Crin., p. 656, pl. 69, fig. 5; pl. 70, figs. 13a, b.
Lower Burlington L. S.: Burlington, Iowa; Sedalia and Hannibal, Missouri

## Platycrinus pisum Rowley and Hare.

1891. Platycrinus pisum. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 113, pl. 3, fig. 3.
Lower Burlington L. S.: Louisiana, Missouri.

1897. Platycrinus pisum. Wachsmuth and Springer, N. Am. Crin. Cam., p. 660, pl. 71, figs. 13a, b.
Lower Burlington L. S.: Louisiana, Missouri.

## Platycrinus planobasalis. See Platycrinus quinquenodus.

## Platycrinus planus Owen and Shumard.

1850. Platycrinus planus. Owen and Shumard, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 57, pl. 7, figs. 4a-c.

Subcarboniferous: Burlington, Iowa.

1852. Platycrinus planus. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 587, tab. 5A, figs. 4a-c.
Subcarboniferous L. S.: Burlington, Iowa; Button-mould Knob, Kentucky.

1873. Platycrinites planus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 452, pl. 3,

figs. 5a, c. (not b = P. pratteni.) Burlington L. S.: (Burlington, Iowa).

1880. Platycrinus bloomfieldensis. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 2, p. 257, pl. 15, fig. 4.

Keokuk Group: New Bloomfield, Missouri.

## Platycrinus planus Owen and Shumard—Continued.

1897. Platyorinus planus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 668, pl. 69, figs. 2a-d.

Lower Burlington L. S.: Burlington, Iowa; Hannibal and Sedalia, Missouri.

Also see Platyorinus halli, Platyorinus pratteni, and Platyorinus agassizi.

## Platycrinus plenus. See Platycrinus huntsvillæ.

Platycrinus pleurovimenus. See Eucladocrinus pleurovimenus.

## Platycrinus pocilliformis Hall.

1858. Platycrinus pocilliformis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 528, pl. 8, figs. 2a, b.

Burlington L. S.: Burlington, Iowa.

1897. Platycrinus pocilliformis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 706, pl. 68, figs. 2a, b.
Lower Burlington L. S.: Burlington, Iowa.

## Platycrinus poculum Miller.

1881. Platycrinus poculum. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 4, p. 311, pl. 7, fig. 4.

Subcarboniferous: Lake Valley Mining District, New Mexico.

Platycrinus prænuntius. See Eucladocrinus prænuntius.

Platycrinus prattenanus. See Platycrinus saræ.

#### Platycrinus pratteni Worthen.

1868. Platyorinus planus? Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 467, pl. 16, fig. 6.
Burlington Group: Burlington, Iowa.

1860. Platycrinus Praticni. Worthen, Trans. St. Louis Acad. Sci., vol. 1, p. 569.
Brown Crinoidal L. S.: Burlington, Iowa.

1894. Platycrinus prattoni. Keyes, Mo. Geol. Surv., vol. 4, p. 198. Lower Burlington L. S.: Sedalia, Missouri.

1897. Platyorinus Prattoni. Wachsmuth and Springer, N. Am. Crin. Cam., p. 671, pl. 70, figs. 11, 12.

Lower Burlington L. S.: Burlington, Iowa.

## Platycrinus pulchellus. See Platycrinus discoideus.

## Platycrinus pumilis Hall.

1860. Platycrinus pumilis. Hall, Supp., vol. 1, pt. 2, Geol. Rep. Ia., p. 82, pl. 1, fig. 6.

Warsaw L. S.: Warsaw, Illinois.

#### Platycrinus quinquenodus White.

1862. Platycrinus quinquenodus. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 18. Upper Burlington L. S.: Burlington, Iowa.

1891. Platycrinus plano-basalis. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 97, pl. 2, fig. 1.

Upper Burlington L. S.: Spencer Creek, 2 miles north of Curryville, Missouri.

1897. Platyorinus quinquenodus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 661, pl. 71, figs. 14a-c.

Upper Burlington L. S.: Burlington, Iowa.

#### Platycrinus regalis Hall.

\*1861. Platycrinus regalis. Hall, Desc. New Spec. Crin., p. 16.
Burlington L. S.

## Platycrinus regalis Hall—Continued.

- 1861. Platycrinus Oweni. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 128. Burlington L. S.: Burlington, Iowa.
- 1872. Platycrinus regalis. Hall, Photo. Plates of Crinoids, pl. 2, fig. 6.
  1897. Platycrinus regalis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 710, pl. 72, figs. 1, 2.

Lower Burlington L. S.: Burlington, Iowa.

## Platycrinus richfieldensis. See Platycrinus graphicus.

Platycrinus rotundus. See Platycrinus sculptus.

#### Platverinus saffordi Hall.

- 1858. Platycrinus saffordi. Hall, Geol. Iowa, vol. 1, pt. 2, p. 634, pl. 18, figs. 5, 6. Keokuk L. S.: Warsaw, Illinois.
- 1894. Platycrinus saffordi. Keyes, Mo. Geol. Surv., vol. 4, p. 202, pl. 25, tig. 1. Keokuk L. S.: Wayland, Missouri; Warsaw, Illinois.
- 1897. Platycrinus Saffordi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 694. pl. 67, figs. 1-3.
  - Upper Burlington L. S. and Keokuk Group: Indian Creek, Montgomery County, Indiana; Keokuk, Iowa; Kentucky; Tennessee; Illinois; Missouri.

#### Platverinus sampsoni Miller.

- 1891. Platycrinus Sampsoni. Miller, Bull. Geol. Surv. Mo., No. 4, p. 13, pl. 1, fig. 11. Burlington Group: Near Sedalia, Missouri.
- 1894. Platycrinus sampsoni. Keyes, Mo. Geol. Surv., vol. 4, p. 199. Burlington L. S.: Ash Grove and Sedalia, Missouri; Burlington, Iowa.
- 1897. Platycrinus Sampsoni. Wachsmuth and Springer, N. Am. Crin. Cam., p. 673, pl. 70, fig. 10. Upper Burlington L. S.: Burlington, Iowa; Sedalia, Missouri.

## Platycrinus saree Hall.

- 1858. Platyorinus saræ. Hall, Geol. Iowa, vol. 1, pt. 2, p. 673, pl. 17, fig. 4. St. Louis L. S.: Near St. Louis, Missouri.
- 1860. Platycrinus georgii. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, p. 82, pl. 1, Warsaw L. S.: Warsaw, Illinois.
- 1860. Platycrinus Prattenanus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil.,
  - St. Louis L. S.: Randolph County, Illinois.
- 1866. Platycrinus Prattenanus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 264, pl. 20, fig. 2.
  - St. Louis Group: Randolph County, Illinois.
- 1882. Platycrinus monroensis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 30.
  - St. Louis L. S.: Monroe County, Illinois; Blount County, Tennessee.
- 1883. Platycrinus Monroonsis. Worthen, Geol. Surv. Ill., vol. 7, p. 306, pl. 30, fig. 9. St. Louis L. S.: Monroe County, Illinois; Blount County, Tennessee.
- 1894. Platycrinus saræ. Keyes, Mo. Geol. Surv., vol. 4, p. 202. St. Louis L. S.: St. Louis, Missouri.
- 1897. Platycrinus Saræ. Wachsmuth and Springer, N. Am. Crin. Cam., p. 677, pl. 69, fig. 7; pl. 70, fig. 1. St. Louis Group: St. Louis, Missouri; Jersey County, Illinois.

#### Platycrinus scobina Meek and Worthen.

- 1861. Platycrinus scobina. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 129. Burlington L. S.: Burlington, Iowa.
- 1861. Platycrinus clytis. Hall, Desc. New Spec. Crin., p. 4. Burlington L. S.

## Platycrinus scobina Meek and Worthen-Continued.

- 1861. Platvorinus clutis. Hall. Jour. Bost. Soc. Nat. Hist., vol. 7, p. 285.
  - Burlington L. S.: Burlington, Iowa,
- 1868. Platycrinus scobina. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 466, pl. 16, fig. 9.

Burlington Group: Burlington, Iowa.

- 1872. Platycrinus clytis. Hall, Photo. Plates of Crinoids, pl. 2, fig. 4.
  1893. Platycrinus clytis. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 2, pl. 3,

Burlington L. S.: Burlington, Iowa.

1897. Platycrinus scobina. Wachsmuth and Springer, N. Am. Crin. Cam., p. 695. pl. 68, figs. 14a, b.

Lower Burlington L. S.: Burlington, Iowa.

## Platycrinus sculptus Hall.

- 1858. Platyorinus soulptus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 536, pl. 8, fig. 11. Burlington L. S.: Burlington, Iowa.
- 1891. Platycrinus rotundus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 20, pl. 2. figs. 11, 12.

Burlington Group: Sedalia, Missouri.

1894. Platycrinus sculptus. Keyes, Mo. Geol. Surv., vol. 4, p. 200.

Lower Burlington L. S.: Sedalia, Missouri.

1897. Platycrinus sculptus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 691, pl. 68, fig. 5; pl. 75, figs. 8, 9.

Lower Burlington L. S.: Burlington, Iowa.

## Platycrinus semifusus Miller and Gurley.

1895. Platycrinus semifusus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 77, pl. 4, figs. 41, 42.

Burlington Group: Sedalia, Missouri.

## Platycrinus sharonensis Miller and Gurley.

1897. Platycrinus sharonensis. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 42, pl. 3, figs. 6, 7.

Burlington Group: Near Sharon, Missouri.

# Platycrinus shumardanus. See Playtycrinus discoideus.

## Platycrinus spinifer Wachsmuth and Springer.

1897. Platycrinus spinifer. Wachsmuth and Springer, N. Am. Crin. Cam., p. 708, pl. 66, fig. 7.

Lower Burlington L. S.: Burlington, Iowa.

## Playtycrinus spinifer var. elongatus Wachsmuth and Springer.

1897. Platycrinus spinifer var. slongatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 709, pl. 67, fig. 7.

Lower Burlington L. S.: Burlington, Iowa.

## Platycrinus striobrachiatus. See Platycrinus corrugatus.

## Platycrinus subscitulus Miller and Gurley.

1896. Platycrinus subscitulus. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 62, pl. 4, figs. 12-15.

Burlington Group: Sedalia, Missouri.

#### Platycrinus subspinosus Hall.

- 1858. Platyorinus subspinosus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 536, pl. 8, figs. 9, 10. Burlington L. S.: Burlington, Iowa.
- 1866. Platycrinus subspinosus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 173, pl. 15, fig. 6.

Burlington L. S.: Burlington, Iowa.

## Platycrinus suospinosus Hall—Continued.

1873. Platycrinites subspinosus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 452, pl. 11, fig. 2.

Burlington L. S.: Burlington, Iowa.

1894. Platycrinus subspinosus. Keyes, Mo. Geol. Surv., vol. 4, p. 197. Lower Burlington L. S.: Louisiana and Sedalia, Missouri.

1897. Platycrinus subspinosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 717, pl. 66, figs. 9a, b.

# Lower Burlington, L. S.: Burlington, Iowa; Lake Valley, New Mexico.

## Platycrinus subspinulosus Hall.

1860. Platycrinus subspinulosus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, p. 81, Burlington L. S.: Burlington, Iowa.

1897. Platycrinus subspinulosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 684, pl. 66, figs. 2a, b; pl. 70, fig. 9.
Upper Burlington L. S.: Burlington, Iowa.

## Platycrinus sulcatus. See Platycrinus excavatus.

## Platycrinus sulciferus Miller and Gurley.

1895. Platycrinus sulciferus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 75, pl. 4, figs. 33, 34.
Burlington Group: Sedalia, Missouri.

## Platycrinus symmetricus Wachsmuth and Springer.

1890. Platycrinus symmetricus. Wachsmuth and Springer, Geol. Surv. Ill., vol. 8, p. 186, pl. 15, fig. 8.

Kinderhook Group: Le Grand, Iowa.

1897. Platycrinus symmetricus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 655, pl. 3, fig. 16; pl. 69, figs. 1a-c.
Kinderhook Group: Le Grand, Marshall County, Iowa.

## Platycrinus tenuibrachiatus Meek and Worthen.

1869. Platycrinites tenuibrachiatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 168.

Upper Burlington L. S.: Burlington, Iowa.

1873. Platycrinites tenuibrachiatus. Meek and Worthen, Geol. Surv. Ill., vol 5, p. 450, pl. 3, fig. 4.

Burlington L. S.: Burlington, Iowa.

1897. Platycrinus tenuibrachiatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 687, pl. 70, figs. 7, 8.
Upper Burlington L. S.: Burlington, Iowa.

#### Platycrinus truncatulus Hall.

1858. Platycrinus truncatulus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 538. Burlington L. S.: Burlington, Iowa.

1897. Piatycrinus truncatulus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 675, pl. 67, figs. 11a, b; pl. 71, figs. 18a, b. Lower Burlington L. S.: Burlington, Iowa.

Platycrinus truncatus. See Platycrinus americanus.

Platycrinus tuberosus. See Eucladocrinus tuberosus.

## Platycrinus tugurium Miller and Gurley.

1895. Platycrinus tugurium. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 70, pl. 4, figs. 17-19.

Burlington L. S.: Sedalia, Missouri.

## Platycrinus vascellum Miller and Gurley.

1895. Platycrinus rascellum. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 32, pl. 2, figs. 17, 18.

Keokuk Group: Tennessee.

## Platycrinus verrucosus White.

- 1862. Platycrinus verrucosus. White, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 502. Burlington L. S.: Burlington, Iowa.
- 1897. Platyorinus verrucesus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 705, pl. 66, figs. 3a, b; pl. 68, figs. 1a-d. Lower Burlington L. S.: Burlington, Iowa.

#### Platycrinus wortheni Hall.

- 1858. Platycrinus wortheni. Hall, Geol. Iowa, vol. 1, pt. 2, p. 530, pl. 8, fig. 4.
  Burlington L. S.: Burlington, Iowa.
- 1897. Platyorinus Wortheni. Wachsmuth and Springer, N. Am. Crin. Cam., p. 702, pl. 67, fig. 9.

## Lower Burlington L. S.: Burlington, Iowa.

## Platycrinus yandelli Owen and Shumard.

- 1850. Platycrinus Fandelli. Owen and Shumard, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 58, pl. 7, figs. 6a, b.
- Subcarboniferous: Burlington, Iowa.
- 1852. Platycrinus yandelli. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 587, tab. 5A, figs. 6a, b.
  - Subcarboniferous L. S.: Burlington, Iowa; Salem, Indiana.
- 1897. Platycrinus Yandelli. Wachsmuth and Springer, N. Am. Crin. Cam., p. 706, pl. 66, figs. 6a-c; pl. 68, figs. 3a-c.
  Lower Burlington L. S.: Burlington, Iowa.

#### Platycrinus yandelli var. perasper Meek and Worthen.

- \*1861. Platycrinus nodobrachiatus. Hall, Desc. New Spec. Crin., p. 17. (Not P. nodobrachiatus Hall, 1858.)
  - Burlington L. S.
- 1865. Platycrinus perasper. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 161.
- 1897. Platycrinus Yandelli, var. perasper. Wachsmuth and Springer, N. Am. Crin. Cam., p. 708, pl. 68, figs. 4a, b.
  - . Lower Burlington L. S.: Burlington, Iowa.

## Platycrinus (species undetermined).

- 1874. Platycrinus † White, Prelim. Rep. Inv. Foss., p. 15.
  Subcarboniferous: Mountain Spring, Old Mormon Road, Nevada.
- 1877. Platyorinus —— (†) White, U. S. Geog. Surv., W. 100 Merid., vol. 4, p. 81, pl. 5, fig. 2.

Subcarboniferous: Mountain Spring, Old Mormon Road, Nevada.

## PLATYSCHISMA McCoy, 1844.

#### Platyschisma dubium Dawson.

1868. Platyschisma dulia. Dawson, Acad. Geol., p. 309, fig. 121. Carboniferous L. S.: Windsor, Nova Scotia.

## Platyschisma helicoides Meek and Worthen.

1866. Platyschisma helicoides? Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 271.

Chester Group: Ste. Genevieve County, Missouri.

## (PLATYSTOMA Conrad, 1842.)

Platystoma bivolve. See Strophostylus bivolvis.

Platystoma broadheadi. See Capulus haliotoides.

Platystoma grayvillense. See Strophostylus grayvillensis.

Platystoma inornatum. See Strophostylus inoruatum.

Platystoma peoriense. See Strophostylus peoriensis.

Platystoma tumidum. See Strophostylus grayvillensis.

## (PLECTAMBONITES Pander, 1830.)

Plectambonites rhomboidalis. See Leptæna rhomboidalis.

(PLECTOSTYLUS Conrad, 1842.)

Plectostylus hildrethi. See Soleniscus hildrethi.

#### PLEURODICTYUM Goldfuss, 1826.

## Pleurodictyum problematicum Goldfuss.

\*1826. Pleurodictyum problematicum. Goldfuss, Petref. Germ., vol. 1, p. 113.

1870. Pleurodictyum problematicum. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 260. Waverly Group: Newark, Ohio.

1888. Pleurodictyum Problematicum. Herrick, Bull. Den. Univ., vol. 3, p. 30, pl. 8, fig. 15.

Waverly Group: Licking County, Ohio.

## PLEUROPHORUS King, 1844.

## Pleurophorus angulatus Meek and Worthen.

1865. Pleurophorus? angulatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 247.

Coal Measures: Wabash Cut-off, near New Harmony, Indiana.

1875. Pleurophorus? angulatus. Meek and Worthen, Gool. Surv. Ill., vol. 6, p. 529, pl. 33, fig. 5.

Upper Coal Measures: Wabash Cut-off, near New Harmony, Indiana.

## Pleurophorus calhouni Meek and Hayden.

1858. Edmondia? Calhouni. Meek and Hayden, Trans. Albany Inst., vol. 4, p. 80. Permian: Smoky Hill Fork.

1864. Pleurophorus? Calhouni. Meek and Hayden, Pal. Upper Mo., p. 62, pl. 2, figs. 13a, b.

Permian: Near mouth of Smoky Hill Fork of Kansas River and at head of Cottonwood Creek, Kansas.

## Pleurophorus chesterensis Worthen.

1884. Pleurophorus chesterensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 16.

Chester L. S.: Chester, Illinois.

1890. Pleurophorus chesterensis. Worthen, Geol. Surv. Ill., vol. 8, p. 123, pl. 20, fig. 6.

Chester L. S.: Chester, Illinois.

## Pleurophorus costatiformis Meek and Worthen.

1865. Pleurophorus costatiformis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 247.

Keokuk Group: Warsaw, Illinois.

1868. Pleurophorus costatiformis. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 535, pl. 19, fig. 5.
Keokuk Group: Warsaw, Illinois.

#### Pleurophorus immaturus Herrick.

1887. Pleurophorus immaturus. Herrick, Bull. Den. Univ., vol. 2, p. 145, pl. 14, fig. 17.

Coal Measures: Flint Ridge, Ohio.

Bull. 153---29

## Pleurophorus meeki Walcott.

1884. Pleurophorus Meeki. Walcott, Pal. Eureka Dist., p. 246, pl. 8, fig. 3. Lower Coal Measures: Eureka District, Nevada.

## Pleurophorus minimus Worthen.

- 1884. Pleurophorus minima. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist. p. 17. Oolitic beds of St. Louis L. S.: Monroe County, Illinois.
- 1890. Pleurophorus minimus. Worthen, Geol. Surv. Ill., vol. 8, p. 124, pl. 20, figs. 4, 4a.

St. Louis L. S. (oolite): Monroe County, Illinois.

## Pleurophorus monroensis Worthen.

1884. Pleurophorus monroensis. Worthen, Bull. No. 2, Ill. State. Mus. Nat. Hist., p. 17.

Oolitic beds of St. Louis L. S.: Monroe County, Illinois.

1890. Pleurophorus monroensis. Worthen, Geol. Surv. Ill., vol. 8, p. 125, pl. 18, figs. 3, 3a.

St. Louis L. S.: Monroe County, Illinois.

## Pleurophorus oblongus Meek.

1866. Clidophorus Pallasi. Geinitz, Carb. und Dyas in Nebr., p. 23, tab. 2, fig. 4. (Not Modiola Pallasi de Vern., 1845.) Nebraska City and Wyoming, Nebraska.

1872. Pleurophorus oblongus. Meek, U. S. Geol. Surv. Nebr., p. 212, pl. 10, figs. 4a-c. Upper Coal Measures: Nebraska City, Nebraska.

1873. Pleurophorus oblongus? Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 589, pl. 26, fig. 6.

Upper Coal Measures: Springfield, Illinois.

1894. Pleurophorus oblongus. Keyes, Mo. Geol. Surv., vol. 5, p. 125. Upper Coal Measures: Kansas City, Missouri.

1897. Pleurophorus oblongus. Smith, Proc. Am. Phil. Soc., vol. 35, p. 36. Lower Coal Measures: Conway County, Arkansas.

## Pleurophorus occidentalis Meek and Hayden.

1858. Pleurophorus occidentalis. Meek and Hayden, Trans. Albany Inst., vol. 4, p. 80.

Permian: In Nebraska on Missouri, opposite north Missouri boundary.

1859. Pleurophorus occidentalis. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 396. White Permian L. S.: Guadalupe Mountains.

1864. Pleurophorus occidentalis. Meek and Hayden, Pal. Up. Mo., p. 35, pl. 1, figs. 11a, b.

Coal Measures: Nebraska, nearly opposite northern boundary of Missouri.

1866. Clidophorus Pallasi. Geinitz, Carb. und Dyas in Nebr., p. 23, tab. 2, fig. 3. (Not Mytilus Pallasi, de Vern., 1845.)
Nebraska City. Nebraska.

1872. Pleurophorus occidentalis? Meek, U. S. Geol. Surv. Nebr., p. 212, pl. 10, fig. 12.

Upper Coal Measures: Otoe City, Nebraska; Nebraska City, Nebraska; Grayville, Illinois.

1891. Clidophorus occidentalis. White, Bull. U. S. Geol. Surv. No. 77, p. 27, pl. 4, fig 3.

Permian: Goodwin Creek, Baylor County, Texas.

## Pleurophorus permianus Swallow.

1858. Pleurophorus (?) Permianus. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 192.

Upper Permian: Near Smoky Hill Fork, Kansas.

1891. Pleurophorus permianus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 250.

Lower Coal Measures: Des Moines, Iowa.

#### Pleurophorus quadricostatus Dawson.

1868. Pleurophorus quadricostatus. Dawson, Acad. Geol., p. 304, fig. 107. Carboniferous L. S.: Stewiacke, Nova Scotia.

## Pleurophorus subcostatus Meek and Worthen.

1865. Pleurophorus subcostatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 246.

Upper Coal Measures: N. branch of Saline Creek, Gallatin County, Illinois.

1866. Pleurophorus subcostatus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 347, pl. 27, figs. 2, 2a.

Upper Coal Measures: North branch of Saline Creek, Gallatin County, Illinois.

1881. Pleurophorus subcostatus. White, U. S. Geog. Surv., W. 100 Merid., vol. 3, Supp., Appendix, p. xxvii, pl. 3, fig. 8a. Carboniferous: Coyote Creek, New Mexico.

1887. Pleurophorus subcostatus? Herrick, Bull. Den. Univ., vol. 2, p. 35, pl. 4, figs. 16, 16a.

Coal Measures: Flint Ridge, Ohio.

## Pleurophorus subcuneatus Meek and Hayden.

1858. Pleurophorus (Cardinia) subcuneatus. Meek and Hayden, Trans. Albany Inst., vol. 4, p. 81.

Permian: Smoky Hill Fork.

1859. Pleurophorus i subcuneata. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 29.

Smoky Hill River and Cottonwood Creek, Kansas.

1864. Pleurophorus ? subcuneatus. Meek and Hayden, Pal. Up. Mo., p. 61, pl. 2, fig. 3.

Permian: Near mouth of Smoky Hill Fork of Kansas River and at head of Cottonwood Creek, Kansas.

1891. Pleurophorus subcuneatus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 250. Lower Coal Measures: Des Moines, Iowa.

# Pleurophorus subellipticus. See Modiola subelliptica.

## Pleurophorus tropidophorus Meek.

1875. Pleurophorus tropidophorus. Meek, Pal. Ohio, vol. 2, p. \$38, pl. 19, figs. 10a, b. Coal Measures: Newark, Ohio.

1887. Pleurophorus tropidophorus. Herrick, Bull. Den. Univ., vol. 2, p. 35, pl. 4, fig. 15.

Coal Measures: Flint Ridge, Ohio.

#### Pleurophorus (species undetermined).

1876. Pleurophorus —— ? ——. White, Powell's Rep. Geol. Uinta Mts., p. 91.

Lower Aubrey Group: Confluence of Grand and Green rivers, Utah.

1891. Pleurophorus —— ? White, Bull. U. S. Geol. Surv. No. 77, p. 27, pl. 4, figs. 5-10.

Permian: Goodwin Creek, Baylor County, Texas.

1897. Pleurophorus sp. Smith, Proc. Am. Phil. Soc., vol. 35, p. 36.

Upper Carboniferous: Scott County, Arkansas.

## PLEUROTOMARIA Defrance, 1824.

#### Pleurotomaria acadica Dawson.

1883. Pleurotomaria Acadica. Dawson, Rep. Peter Redpath Mus., No. 2, p. 11. Lower Carboniferous L. S.: Windsor, Nova Scotia.

#### Pleurotomaria adamsi Worthen.

1884. Pleurotomaria adamsi. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 5.
Coai Measures: Peoris County, Illinois.

## Pleurotomaria adamsi Worthen-Continued.

1890. Pleurotomaria adamsi. Worthen, Geol. Surv. Ill., vol. 8, p. 137, pl. 23, figs. 5, 5a.

Coal measures: Peoria County, Illinois.

## Pleurotomaria beckwithana McChesney.

1860. Pleurotomaria beckwithana. McChesney, Desc. New Pal. Foss., p. 61. Coal Measures: Danville, Illinois.

1865. Pleurotomaria beokwithana. McChesney, Ill. New Spec. Foss, pl. 2, figs. 17a-b.

1868. Pleurotomaria Beckwithana. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 47, pl. 2, figs. 17 a-c.

Coal Measures: Springfield and Danville, Illinois.

## Pleurotomaria bicarinata. See Pleurotomaria turbiniformis.

#### Pleurotomaria bonharborensis Cox.

1857. Pleurotomaria bonharborensis. Cox, Geol. Surv. Ky., vol. 3, p. 567, pl. 8, figs. 4, 4a.
Coal Measures: Daviess County, Kentucky.

# Pleurotomaria brazoensis Shumard.

1860. Pleurotomaria Brazoensis. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 624.

Coal Measures: Young County, Texas, near Indian Reservation.

1866. Pleurotomaria brazoensis? Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 354, pl. 28, figs. 1a-d.
Lower Coal Measures: Hodge's Creek, Macoupin County, Illinois.

1888. Pleurotomaria brazoensis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 237.

Lower Coal Measures: Des Moines, Iowa.

1894. Pleurotomaria brazoensis. Keyes, Mo. Geol. Surv., vol. 5, p. 142, pl. 48, figs. 2a, b.

Lower Coal Measures: Clinton, Missouri.

#### Pleurotomaria broadheadi White.

1880. Pleurotomaria broadheadi. White, Cont. to Inv. Pal., No. 8, p. 169, pl. 42, figs. 1a, b.

Coal Measures: Kansas City, Missouri.

1894. Pleurotomaria broadheadi. Keyes, Mo. Geol. Surv., vol. 5, p. 144, pl. 48, figs. 1a, b.

Upper Coal Measures: Kansas City and Clinton, Missouri.

#### Pleurotomaria carbonaria Norwood and Pratten.

1855. Pleurotomaria carbonaria. Norwood and Pratten, Jour. Acad. Nat. Sci.
Phil.(2), vol. 3, p. 75, pl. 9, fig. 8.

Coal Measures: Rock Creek, Williamson County, Illinois.

1888. Pleurotomaria carbonaria. Keyes, Proc. Acad. Nat. Sci. Phil., p. 239. Lower Coal Measures: Des Moines, Iowa.

1891. Pleurotomaria carbonaria. Keyes, Proc. Acad. Nat. Sci. Phil., p. 263.
Lower Coal Measures: Des Moines, Iowa.

1891. Pleurotomaria karii. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 83, pl. 14, figs. 3, 4.
Upper Coal Measures: Kansas City, Missouri.

1892. Pleurotomaria harii. Miller, 17th Rep. Geol. Surv. Ind., p. 693, pl. 14, figs. 3, 4.

Upper Coal Measures: Kansas City, Missouri.

1894. Pleurotomaria oarbonaria. Keyes, Mo. Geol. Surv., vol. 5, p. 138 Upper Coal Measures: Kansas City, Missouri.

1897. Pleurotomaria harii. Smith, Proc. Am. Phil. Soc., vol. 35, p. 40. Lower Coal Measures: Conway County, Arkansas.

## Pleurotomaria chesterensis Meek and Worthen.

1860. Pleurotomaria Chesterensis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 460.

Chester, L. S.: Chester, Illinois.

1866. Pleurotomeria chesterensis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 303, pl. 24, figs. 1a-c.

Chester Group: Chester, Illinois.

Pleurotomaria chesterensis Swallow. See Pleurotomaria (species undetermined).

Pleurotomaria concava. See Eotrochus concavus.

#### Pleurotomaria conoformis Worthen.

1866. Pleurotomaria conoides. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 271. (Not P. conoides, Deshayes, 1831.)

Lower Coal Measures: Hodge's Creek, Macoupin County, Illinois.

1873. Pleurotomaria conoides. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 603, pl. 28, fig. 1.

Lower Coal Measures: Hodge's Creek, Macoupin County, Illinois.

1882. Pleurotomaria conoformis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 38.

1894. Pleurotomaria coniformia. Keyes, Mo. Geol. Surv., vol. 5, p. 138. Upper Coal Measures: Kansas City, Missouri.

Pleurotomaria conoides. See Pleurotomaria conoformis.

## Pleurotomaria conulus Hall.

1856. Pleurotomaria conula. Hall, Trans. Albany Inst., vol. 4, p. 26.
St. Louis L. S.: Spergen Hill, Indiana.

1882. Plaurotomaria conula. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 84, pl. 9, fig. 17.

St. Louis Group: Spergen Hill, Indiana.

1883. Pleurotomaria conula. Hall, 12th Rep. Geol. Surv. Ind., p. 358, pl. 32, fig. 17.
St. Louis Group: Spergen Hill and Lanesville, Indiana.

# Pleurotomaria cooperensis Miller.

1863. Pleurotomaria trochiformis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 99. (Not P. trochiformis, Postlock, 1843.)
Archimedes L. S.: Cooper County, Missouri.

1889. Pleurotomaria cooperensis. Miller, N. A. Geol. and Pal., p. 420.

Pleurotomaria coronula. See Pleurotomaria sphærulata.

#### Pleurotomaria coxana Meek and Worthen.

1866. Pleurotomaria Cozana. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 272. Lower Coal Measures: Nolan's Furnace, Edmonson County, Kentucky.

1873. Pleurotomaria Cozana. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 600, pl. 28, fig. 15.

Coal Measures: Nolin's Furnace, Edmonson County, Kentucky.

1894. Pleurotomária cozana. Keyes, Mo. Geol. Surv., vol. 5, p. 136. Upper Coal Measures: Kansas City, Missouri.

Pleurotomaria coxana Worthen. See Pleurotomaria iowensis.

Pleurotomaria depressa. See Pleurotomaria illinoiensis.

## Pleurotomaria dispersa Dawson.

1868. Pleurotomaria dispersa. Dawson, Acad. Geol., p. 310. Carboniferous: Windsor, Nova Scotia.

#### Pleurotomaria elegantula Hall.

1856. Murchisonia elegantula. Hall, Trans. Albany Inst., vol. 4, p. 27.
8t. Louis L. S.: Bloomington, Indiana.

## Pleurotomaria elegantula Hall-Continued.

- 1882. Pleurotomaria elegantula. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 84, pl. 9, fig. 19.
  - St. Louis Group: Bloomington, Indiana; Warsaw, Illinois.
- 1883. Pleurotomaria elegantula. Hall, 12th Rep. Geol. Surv. Ind., p. 358, pl. 32, fig. 19.
  - St. Louis Group: Bloomington, Spergen Hill, and Lanesville, Indiana.

#### Pleurotomaria excelsa Newberry.

- 1876. Pleurotomaria excelsa. Newberry, U. S. Expl. Exp. from Santa Fé to Grand and Green rivers, p. 140, pl. 3, figs. 4, 4a.
  - Upper Carboniferous: Canyon of Grand River, near junction with Green River, Southern Utah.
- 1876. Pleurotomaria excelsa. White, Powell's Rep. Geol. Uinta Mts., p. 91.

  Lower Aubrey Group: Confluence of Grand and Green rivers, Utah.

## Pleurotomaria exigua Winchell.

1862. Pleurotomaria exigua. Winchell, Proc. Acad. Nat. Sci. Phil., p. 424.
Marshall Group: Jefferson, Hillsdale County, Michigan.

# Pleurotomaria giffordi Worthen.

- 1884. Pleurotomaria giffordi. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 5. Coal Measures: Peoria County, Illinois.
- 1890. Pleurotomaria giffordi. Worthen, Geol. Surv. Ill., vol. 8, p. 135, pl. 23, figs. 8, 8a.
  Coal Measures: Peoria County, Illinois.

## Pleurotomaria glandula Shumard.

1860. Pleurotomaria glandula. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 626. Coal Measures: Buchanan County, Texas.

## Pleurotomaria granulostriata Meek and Worthen.

- 1860. Pleurotomaria granulostriata. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 459.
  - Coal Measures: Hodge's Creek, Macoupin County, Illinois.
- 1866. Pleurotomaria granulo-striata. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 356, pl. 28, figs. 2a-d.
  - Lower Coal Measures: Macoupin County, Illinois.

## Pleurotomaria grayvillensis Norwood and Pratten.

- 1855. Pleurotomaria Grayrillensis. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 75, pl. 9, figs. 7a, b.
  - Coal Measures: Grayville, Illinois; near mouth of Rush Creek, Posey County, Indiana; Shawneetown and Galatia, Illinois.
- 1866. Pleurotomaria Grayvillensis. Geinitz, Carb. und Dyas in Nebr., p. 9, tab. 1, fig. 9.
  - Nebraska City, Nebraska.
- 1872. Pleurotomaria Grayvillensis. Meek, U. S. Geol. Surv. Nebr., p. 233, pl. 11, fig. 9.
  - Upper Coal Measures: Nebraska City, Nebraska; Illinois; Kentucky; Iowa; Missouri; Kansas.
  - Lower Coal Measures: Illinois and West Virginia.
- 1879. Pleurotomaria grayvillensis. White, Rull. U. S. G. and G. Surv. Terr., vol. 5, p. 219.
  - Carboniferous: Wild Band Pockets, northern Arizona, 15 miles south of Pipe Spring.
- 1880. Pleurotomaria grayvillensis. White, Cont. to Inv. Pal., No. 6, p. 140, pl. 34, fig. 5a.
  - Upper Carboniferous: Wild Band Pockets, northern Arizona, 15 miles south from Pipe Spring.

## Pleurotomaria grayvillensis Norwood and Pratten-Continued.

- 1888. Pleurotomaria grayvillensis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 238.

  Lower Coal Measures: Des Moines, Iowa.
- 1894. Pleurotomaria grayvillensis. Keyes, Mo. Geol. Surv., vol. 5, p. 141. Lower Coal Measures: Kansas City and Pleasant Hill, Missouri.

## Pleurotomaria gurleyi Meek.

- 1871. Pleurotomaria gurleyi. Meek, Proc. Acad. Nat. Sci. Phil., p. 117. Coal Measures: Dauville, Illinois.
- 1873. Pleurotomaria Gurleyi. Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 30, figs. 6a, b.
  Coal Measures.
- 1874. Pleurotomaria Gurleyi. Meek, Am. Jour. Sci. (3), vol. 7, p. 584.

#### Pleurotomaria hallana Shumard.

1859. Pleurotomaria Halliana. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 399.

White Permian L.S.: Guadalupe Mountains.

#### Pleurotomaria harii. See Pleurotomaria carbonaria.

## Pleurotomaria haydenana Geinitz.

- 1866. Pleurotomaria Haydeniana. Geinitz, Carb. und Dyas in Nebr., p. 11, tab. 1, fig. 15.
  - Nebraska City, Nebraska.
- 1872. Pleurotomaria Haydeniana. Meek, U. S. Geol. Surv. Nebr., p 231, pl. 11, fig. 5.
  Upper Coal Measures: Nebraska City. Nebraska.

#### Opper Coar Measures: Neuraska City, Neur

#### Pleurotomaria hickmanensis Winchell.

- 1869. Pleurotomaria Hickmanensis. Winchell, Safford's Geol. of Tenn., p. 445.
  Shales, just above Black Shale: Hickman and Maury counties, Tennessee.
- 1870. Pleurotomaria Hickmanensis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 257.

Waverly Group: Hickman County, Tennessee.

#### Pleurotomaria humerosa Meek and Hayden.

- 1858. Pleurotomaria humerosa. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 264.
  - Coal Measures: Grasshopper Creek, Kansas.
- 1864. Pleurotomaria humerosa. Meek and Hayden, Pal. Up. Mo., p. 46, pl. 1, figs. 14a, b.

Coal Measures: Grasshopper Creek, Northwestern Kansas.

#### Pleurotomaria humilis Hall.

- 1856. Pleurotomaria humilis. Hall, Trans. Albany Inst., vol. 4, p. 21. St. Louis L. S.: Bloomington and Spergen Hill, Indiana.
- 1882. Pleurotomaria humilis. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 82, pl. 9, fig. 3.
  - St. Louis Group: Spergen Hill and Bloomington, Indiana.
- 1883. Pleurotomaria humilis. Hall, 12th Rep. Geol. Surv. Ind., p. 353, pl. 32, fig. 3. St. Louis Group: Bloomington, Lanesville, and Spergen Hill, Indiana.

# Pleurotomaria humilis Winchell. See Pleurotomaria (species undetermined).

## Pleurotomaria ignobilis Dawson.

1868. Pleurotomaria ignobilis. Dawson, Acad. Geol., p. 310. Carboniferous L. S.: Windsor, Nova Scotia.

#### Pleurotomaria illinoisensis Worthen.

- 1857. Pleurotomaria depressa. Cox, Geol. Rep. Ky., vol. 3, p. 569, pl. 8, figs. 10, 10a. (Not P. depressa, Phillips, 1836.)
  - Coal Measures: Bonharbour, Daviess County, and Airdrie, Muhlenberg County, Kentucky.
- 1884. Pleurotomaria illinoiensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 4.
  - Coal Measures: Mercer County, Illinois.
- 1888. Pleurotomaria modesta. Keyes, Proc. Acad. Nat. Soi. Phil., p. 238, pl. 12, figs. 2a, b.
- Lower Coal Measures: Des Moines, Iowa. 1889. Pleurotomaria kentuckiensis. Miller, N. A. Geol. and Pal., p. 421.
- 1890. Pleurotomaria illinotensis. Worthen, Geol. Surv. III., vol. 8, p. 135, pl. 23, figs. 6-6b.
  - Coal Measures: Mercer County, Illinois.
- 1891. Pleurotomaria modesta. Keyes, Proc. Acad. Nat. Sci. Phil., p. 252. Lower Coal Measures: Des Moines, Iowa.
- 1892. Pleurotomaria modesta. Keyes, Proc. Iowa Acad. Sci., vol. 1, pt. 2, p. 22.
  Lower Coal Measures: Near Des Moines, Iowa.
- 1894. Pleurotomaria illinoisensis. Keyes, Mo. Geol. Surv., vol. 5, p. 139. Coal Measures: Clinton, Knob Noster, and Kansas City, Missouri.
- 1897. Pleurotomaria modesta. Smith, Proc. Am. Phil. Soc., vol. 35, p. 39. Upper Coal Measures: Crawford County, Arkansas.

#### Pleurotomaria inornata Meek.

1872. Pleurotomaria inornata. Meek, U. S. Geol. Surv. Nebr., p. 232, pl. 4, fig. 14.
Upper Coal Measures: Near Nebraska City, Nebraska.

## Pleurotomaria iowensis Worthen.

- 1884. Pleurotomaria coxana. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 6. (Not P. coxana, M. and W., 1866.)
  - Keokuk L. S.: Keokuk, Iowa.
- 1890. Pleurotomaria iowensis. Worthen, Geol. Surv. Ill., vol. 8, p. 138, pl. 24, fig. 2. Keokuk L. S.: Keokuk, Iowa.

Pleurotomaria kentuckiensis. See Pleurotomaria illinoisensis.

Pleurotomaria lens. See Straparollus lens.

Pleurotomaria levenworthana. See Cyclonema levenworthanum.

## Pleurotomaria marcouana Geinitz.

- 1866. Pleurotomaria Marconiana. Geinitz, Carb. und Dyas in Nebr., p. 10, tab. 1, fig. 10.
  - Nebraska City, Nebraska.
- 1872. Pleurotomaria Marcouiana. Meek, U. S. Geol. Surv. Nebr., p. 233, pl. 11, fig. 8.

Upper Coal Measures: Nebraska City, Nebraska.

#### Pleurotomaria meekana Hall.

- 1856. Pleurotomaria Meekana. Hall, Trans. Albany Inst., vol. 4, p. 22. St. Louis L. S.: Spergen Hill, Indiana.
- 1882. Pleurotomaria (f) Moekana. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 82, pl. 9, figs. 8, 9.
  St. Louis Group: Alton, Ill.
- 1883. Pleurotomaria meekana. Hall, 12th Rep. Geol. Surv. Ind., p. 353, pl. 32, figs. 8, 9.
  Does not occur at Spergen Hill.

#### Pleurotomaria meta Meek and Worthen.

1865. Pleurotomaria (Murchisonia?) meta. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 252.

Keokuk Group: Warsaw, Illinois.

#### Pleurotomaria minima Rowley.

1895. Pleurotomaria minima. Rowley, Am. Geol., vol. 16, p. 222, fig. 19. Louisiana L. S.: Louisiana, Missouri.

## Pleurotomaria mississippiensis White and Whitfield.

- 1862. Pleurotomaria mississippiensis. White and Whitfield, Proc. Bost. Soc. Nut. Hist., vol. 8, p. 302.
  - Chemung Group: Burlington, Iowa.
- 1871. Pleurotomaria textiligera. Meek, Proc. Acad. Nat. Sci. Phil., p. 176. Waverly Group: Medina, Ohio.
- 1875. Pleurotomaria taxtiligera. Meek, Pal. Ohio, vol. 2, p. 314, pl. 13, figs. 7a, b. Waverly Group: Medina, Ohio.
- 1888. Pleurotomaria textiligera. Herrick, Bull. Den. Univ., vol. 4, p. 46. Waverly Group: Bagdad and Lodi, Ohio.
- 1891. Pleurotomaria Mississippiensis. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 609.
- 1894. Pleurotomaria Mississippiensis. Whitfield, Geol. Surv. Ohio, vol. 7, p. 494.

## Pleurotomaria missouriensis Swallow.

- 1860. Trochus Missouriensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 657. Coal Measures: Jackson County, Missouri.
- 1894. Pleurotomaria missouriensis. Keyes, Mo. Geol. Surv., vol. 5, p. 136, pl. 48, figs. 3a, b.
  Upper Coal Measures: Kansas City, Missouri.

## Pleurotomaria mitigata Hall.

1860. Pleurotomaria? mitigata. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 108. Goniatite L. S.: Rockford. Indiana.

## Pleurotomaria modesta. See Pleurotomaria illinoisensis.

## Pleurotomaria monilifera White.

- 1880. Naticopeis monilifera. White, Cont. to Inv. Pal., No. 8, p. 168, pl. 42, figs. 3a-c.
  - ' Upper Coal Measures: Pleasant Hill, Cass County, Missouri.
- 1881. Naticopsis monilifera. White, U. S. Geog. Surv. W. 100 Merid., vol. 3, Supp. Appendix, p. xxxiv, pl. 3, figs. 3a-d.
  Carboniferous: Near Taos, New Mexico.
- 1894. Pleurotomaria monilifera. Keyes, Mo. Geol. Surv., vol. 5, p. 144. Upper Coal Measures: Pleasant Hill and Kansas City, Missouri.

## Pleurotomaria montezuma Worthen.

- 1883. Pleurotomaria Montezuma. Worthen, Geol. Surv. Ill., vol. 7, p. 324. Burlington L. S.: Montezuma, Pike County, Illinois.
- 1890. Pleurotomaria montesuma. Worthen, Geol. Surv. Ill., vol. 8, p. 136, pl. 24, fig. 2.
  - Burlington L. S.: Montezuma, Pike County, Illinois.
- 1894. Pleurolomaria montezuma. Keyes, Mo. Geol. Surv., vol. 5, p. 134. Burlington L. S.: Hannibal, Missouri.

## Pleurotomaria nauvocensis Worthen.

1884. Pleurotomaria nauvocensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 5.

Upper Keokuk L. S.: Nauvoo, Illinois.

#### Plenrotomaria nauvocensis Worthen—Continued.

1890. Pleurotomaria nauvocensis. Worthen, Geol. Surv. Ill., vol. 8, p. 137, pl. 25, fig. 3.

Keokuk L. S.: Nauvoo, Illinois.

#### Pleurotomaria nevadensis Walcott.

1884. Pleurotomaria Nevadensis. Walcott, Pal. Eureka Dist., p. 259, pl. 24, figs. 2, 2a.

Lower Carboniferous: Eureka District, Nevada.

## Pleurotomaria newportensis White.

1880. Pleurotomaria newportensis. White, Cont. to Pal., No. 8, p. 169, pl. 42, figs. 2a, b.

Coal Measures: Newport, Indiana.

1887. Pleurotomaria newportensis? Herrick, Bull. Den. Univ., vol. 2, p. 21, pl. 2, fig. 18.

Coal Measures: Flint Ridge, Ohio.

## Pleurotomaria nodomarginata McChesney.

1860. Pleurotomaria nodomarginata. McChesney, Desc. New Pal. Foss., p. 70. Hamilton Group: Near Batesville, Arkansas.

1865. Pleurotomaria nodomarginata. McChesney, Ills. New Spec. Foss., pl. 7, figs. 1a-c.

1868. Pleurotomaria nodomarginata. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 47, pl. 7, figs. 1a-c.

Hamilton Group: Batesville, Arkansas.

1884. Pleurotomaria nodomarginata. Walcott, Pal. Eureka Dist., p. 259, pl. 18, fig. 15.

Lower Carboniferous: Eureka District, Nevada.

## Pleurotomaria nodulostriata Hall.

1856. Pleurotomaria nodulostriata. Hall, Trans. Albany Inst., vol. 4, p. 21.
St. Louis L. S.: Spergen Hill and Bloomington, Indiana.

1882. Pleurotomaria nodulostriata. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 80, pl. 9, fig. 5.

St. Louis Group: Spergen Hill and Bloomington, Indiana; Alton, Illinois. 1883. Plaurotomaria nodulostriata. Hall, 12th Rep. Geol. Surv. Ind., p. 352, pl. 32,

1883. Pleurotomaria nodulostriata. Hall, 12th Rep. Geol. Surv. Ind., p. 352, pl. 33 fig. 5.

St. Louis Group: Spergen Hill, Lanesville, and Bloomington, Indiana

#### Pleurotomaria obtusispira Shumard.

1859. Pleurotomaria obtusispira. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 401.
Coal Measures: 4 miles west of Sierra Heuco, El Paso County, Texas.

#### Pleurotomaria perhumerosa Meek.

1872. Pleurotomaria perhumerosa. Meek, U. S. Geol. Surv. Nebr., p. 232, pl. 4, figs. 134, b.

Upper Coal Measures: Near Nebraska City, Nebraska; Rulo, Kansas. Coal Measures: Illinois.

1894. Pleurotomaria perhumerosa. Keyes, Mo. Geol. Surv., vol. 5, p. 140, pl. 48, fig. 5.

Upper Coal Measures: Kansas City, Missouri.

## Pleurotomaria perizomata White.

1881. Pleurotomaria perizomata. White, U. S. Geol. Surv. W. 100 Merid., vol. 3, Supp. Appendix, p. xxxi, pl. 3, figs. 5a-o.

Carboniferous: Near Taos, New Mexico.

## Pleurotomaria perornata Shumard.

1859. Pleurotomaria perornata. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 401.

Coal Measures: 4 miles west of Sierra Heuco, El Paso County, Texas.

## Pleurotomaria piasaensis Hall.

1856. Pleurotomaria Piasaoneis. Hall, Trans. Albany Inst., vol. 4, p. 22.
St. Louis L. S.: Pine Creek, above Alton, Illinois.

1882. Pleurotomaria Piasaensis. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 83, pl. 9, figs. 6, 7.

St. Louis Group: Piasa Creek, above Alton, Illinois.

1883. Pleurotomaria piasaensis. Hall, 12th Rep. Geol. Surv. Ind., p. 354, pl. 32, figs. 6, 7.

St. Louis Group: Piasa Creek, above Alton, Illinois.

## Pleurotomaria pratteni Meek and Worthen.

1860. Pleurotomaria Pratteni. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 459.

Coal Measures: Hodge's Creek, Macoupin County, Illinois.

1866. Pleurotomaria Pratteni. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 357, pl. 28, figs. 7a-d.

Lower Coal Messures: Macoupin County, Illinois.

## Pleurotomaria proutana Shumard.

1859. Pleurotomaria Proutiana. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 401.

Coal Measures: 4 miles west of Sierra Heuco, El Paso County, Texas.

#### Pleurotomaria quinquesulcata Winchell.

1865. Pleurotomaria quinquesulcata. Winchell, Proc. Acad. Nat. Sci. Phil., p. 131. Oolite bed No. 6: Burlington, Iowa.

## Pleurotomaria riddelli Shumard.

1860. Pleurotomaria Riddellii. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 625.

Coal Measures: Palo Pinto County, Texas.

## Pleurotomaria rota Winchell.

1863. Pleurotomaria f rota. Winchell, Proc. Acad. Nat. Sci. Phil., p. 19.
Yellow S. S. and base of Burlington L. S.: Burlington, Iowa.

Pleurotomaria rotundata. See Pleurotomaria subglobosa.

## Pleurotomaria scitula Meek and Worthen.

1860. Pleurotomaria soitula. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 461.

Coal Measures: Hodge's Creek, Macoupin County, Illinois.

1866. Plourotomaria scitula. Meek and Worthen, Geol. Surv. 111., vol. 2, p. 353, pl. 28, figs. 9a-d.

Lower Coal Measures: Hodge's Creek, Macoupin County, Illinois.

## Pleurotomaria tedaliense Miller.

1891. Pleurotomaria sedaliense. Miller, Adv. Sheets 17th Rep. Geol. Surv. Ind., p. 83, pl. 14, fig. 13.

Chouteau L. S.: Sedalia, Missouri.

1892. Pleurotomaria sedaliense. Miller, 17th Rep. Geol. Surv. Ind., p. 693, pl. 14, fig. 13.

Chouteau L.S.: Sedalia, Missouri.

1894. Pleurotomaria sedaliensis. Keyes, Mo. Géol. Surv., vol. 5, p. 134. Kinderhook L. S.: Sedalia, Missouri.

## Pleurotomaria shumardi Meek and Worthen.

1860. Pleurotomaria Shumardi. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 462.

Base of Geode bed: Warsaw and Keokuk, Illinois.

1866. Plaurotomaria Shumardi. Meek and Worthen, Geol.Surv. Ill., vol. 2, p. 260, pl. 18, figs. 6a, b.
Keckuk Group: Warsaw, Illinois.

#### Pleurotomaria sinistrorsa Swallow.

1858. Pleurotomaria sinistrorea. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 203.

Coal Measures.

# Pleurotomaria speciosa Meek and Worthen.

1860. Pteurotomaria speciosa. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 461.

Coal Measures: Hodge's Creek, Macoupin County, Illinois.

1866. Pleurotomaria speciosa. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 352, pl. 28, figs. 5 a-c.

Lower Coal Measures: Hodge's Creek, Macoupin County, Illinois.

1894. Pleurotomaria speciosa. Keyes, Mo. Geol. Surv., vol. 5, p. 137. Upper Coal Measures: Kansas City, Missouri.

1897. Pleurotomaria conf. speciosa. Smith, Proc. Am. Phil. Soc., vol. 35, p. 39.
Upper Coal Measures: Poteau Mountain, Indian Territory.

## Pleurotomaria sphærulata Conrad.

1842. Pleurotomaria ephaerulata. Conrad, Jour. Acad. Nat. Sci. Phil., (1), vol. 8, p. 272, pl. 16, fig. 13.

Carboniferous: Inclined plane of the Allegany Mountains.

1852. Pleurotomaria coronula. Hall, Stausb. Exped. Gt. Salt Lake, p. 413, pl. 2, figs. 6a-d.
Carboniferous: Missouri River, below Weston.

1858. Pleurotomaria sphaerulata. Hall, Geol. Iowa, vol. 1, pt. 2, p. 722, pl. 29, fig. 13.

Coal Measures: Indiana, Illinois, Iowa, Missouri, and Kansas.

1884. Pleurotomaria sphærulata. White, 13th Rep. Geol. Surv. Ind., p. 161, pl. 32, figs. 1-3.

Upper Coal Measures: Indiana.

1891. Pleurotomaria sphærulata. Keyes, Proc. Acad. Nat. Sci. Phil., p. 253. Lower Coal Measures: Des Moines, Iowa.

1894. Pleurotomaria sphærulata. Keyes, Mo. Geol. Surv., vol. 5, p. 141.
Upper Coal Messures: Kansas City, Missouri.

## Pleurotomaria spironema Meek and Worthen.

1866. Pleurotomaria spironema. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 272.

Lower Coal Measures: Hodge's Creek, Macoupin County, Illinois.

1873. Pleurotomaria spironoma. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 601, pl. 28, fig. 5.

Coal Measures: Hodge's Creek, Macoupin County, Illinois.

#### Pleurotomaria stella Winchell.

1862. Pleurotomaria Stella. Winchell, Proc. Acad. Nat. Sci. Phil., p. 424.
Marshall Group: Jefferson, Hillsdale County, Michigan.

1888. Pleurotomaria stella? Herrick, Bull. Den. Univ., vol. 4, p. 116, pl. 10, fig. 41.
Waverly Group: Newark, Ohio.

## Pleurotomaria strigillata Herrick.

1888. Pleurotomaria (Cyclonema?) strigillata. Herrick, Bull. Den. Univ., vol. 3, p. 86, pl. 1, figs. 10, 15; pl. 2, fig. 25.
Waverly Group: Licking County, Ohio.

1888. Cyclonema strigillata. Herrick, Bull. Den. Univ., vol. 3, pl. 12, fig. 39. Waverly Group: Licking County, Ohio.

1888. Pleurotomaria etrigillata. Herrick, Bull. Den. Univ., vol. 4, pl. 7, fig. 9. Waverly Group: Ohio.

1895. Pleurotomaria strigillata. Herrick, Geol. Surv. Ohio, vol. 7, pl. 18, fig. 9. Kinderhook: Granville, Ohio.

#### Pleurotomaria stulta Herrick.

1888. Flomingia stultus. Herrick, Bull. Den. Univ., vol. 4, p. 45, pl. 7, fig. 10.

Middle Waverly: Ohio.

1895. Pleurotomaria (Flemingia) stulta. Herrick, Geol. Surv. Ohio, vol. 7, pl. 18, fig. 10.

Kinderhook: Granville, Ohio.

## Pleurotomaria subangulata. See Cyclonema subangulatum.

#### Pleurotomaria subcarbonaria Keyes.

1894. Pleurotomaria subcarbonaria. Keyes, Mo. Geol. Surv., vol. 5, p. 135, pl. 49, fig. 2.

Burlington L. S.: Louisiana, Missouri.

Kinderhook Group: Burlington, Iowa.

#### Pleurotomaria subconstricta Meek and Worthen.

1860. Pleurotomaria subconstricta. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 458.

Coal Measures: Hodge's Creek, Macoupin County, Illinois.

1866. Pleurotomaria subconstricta. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 351, pl. 28, figs. 6a-c.

Lower Coal Measures: Hodge's Creek, Macoupin County, Illinois.

#### Pleurotomaria subdecussata Geinitz.

1866. Pleurotomaria subdecussata. Geinitz, Carb. und Dyas in Nebr., p. 10, tab. 1, fig. 11.

Nebraska City, Nebraska.

1872. Pleurotomaria subdecussata. Meek, U. S. Geol. Surv. Nebr., p. 233, pl. 11, fig 19.

Upper Coal Measures: Nebraska City, Nebraska.

## Pleurotomaria subglobosa Hall.

1856. Pleurotomaria rotundata. Hall. Trans. Albany Inst., vol. 4, p. 23. (Not P. rotundata Hall, 1843.)

St. Louis L. S.: Spergen Hill and Bloomington, Indiana; Alton, Illinois.

1877. Pleurotomaria subglobosa. Hall, Miller's Am. Pal. Foss., p. 245.

1882. Pleurotomaria subglobosa. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 79, pl. 9, fig. 10.

St. Louis Group: Spergen Hill and Bloomington, Indiana; Alton, Illinois.

1883. Pleurotomaria subglobosa. Hall, 12th Rep. Geol. Surv. Ind., p. 355, pl. 32, fig. 10.

St. Louis Group: Spergen Hill, Bloomington, and Lanesville, Indiana; Alton, Illinois.

# Pleurotomaria subscalaris Meek and Worthen.

1860. Pleurotomaria subscalaris. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 460.

Lower Coal Measures: Macoupin County, Illinois.

1866. Pleurotomaria subscalaris. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 360, pl. 28, figs. 10a, b.

Lower Coal Measures: Hodge's Creek, Macoupin County, Illinois.

1894. Pleurotomaria subscalaris. Keyes, Mo. Geol. Surv., vol. 5, p. 136. Upper Coal Measures: Kansas City, Missouri.

## Pleurotomaria subsinuata Meek and Worthen.

1860. Pleurotomaria subsinuata. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 460.

Coal Measures: Hodges Creek, Macoupin County, Illinois.

1866. Pleurotomaria subsinuata. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 358, pl. 28, figs. 4a-d.

Lower Coal Measures: Maconpin County, Illinois.

#### Pleurotomaria subturbinata Meek and Hayden.

1858. Pleurotamaria subturbinata. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 264.

Upper Coal Measures: Near Helena, Kansas.

1864. Pleurotomaria subturbinata. Meek and Hayden, Pal. Up. Mo., p. 47, pl. 1, fig. 13.

Coal Measures: Grasshopper Creek, northeastern Kansas.

## Pleurotomaria sulcomarginata Conrad.

1879. Pleurotomaria sulcomarginata. Hall, Pal. N. Y., vol. 5, pt. 2, p. 69, pl. 19, figs. 8-17.

Hamilton Group: New York.

1888. Pleurotomaria sulcomarginata? Herrick, Bull. Den. Univ., vol. 4, pl. 9, fig. 14.
Bedford Shale: Central College, Ohio.

1889. Pleurotomaria sp. Herrick, Am. Geol., vol. 3, pl. 4, fig. 14.

1895. Pleurotomaria sulcomarginata. Herrick, Geol. Surv. Ohio, vol. 7. pl. 20, fig. 14. Shale above Berea Grit: Ohio.

#### Pleurotomaria swallovana Hall.

1856. Pleurotomaria Swallovana. Hall, Trans. Albany Inst., vol. 4, p. 24.

St. Louis L. S.: Spergen Hill and Bloomington, Indiana.

1882. Pleurotomaria Swallovana. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 80, pl. 9, figs. 1, 2.

St. Louis Group: Spergen Hill and Bloomington, Indiana.

1883. Pleurotomaria Swallovana. Hall, 12th Rep. Geol. Surv. Ind., p. 356, pl. 32, figs. 1, 2.

St. Louis Group: Spergen Hill, Lanesville and Bloomington, Indiana.

#### Pleurotomaria tabulata Conrad.

1835. Turbo tabulata. Conrad, Trans. Geol. Soc. Penn., vol. 1, pt. 2, p. 267, pl. 12, fig. 1.

1842. Pleurotomaria tabulata. Conrad, Jour. Acad. Nat. Sci. Phil. (1), vol. 8, p. 272. Carboniferous: Inclined plane of the Alleghany Mountains.

1858. Pleurotomaria tabulata. Hall, Geol. Iowa, vol. 1, pt. 2, p. 721, pl. 29, figs. 12a, b. Coal Measures: Pennsylvania, Indiana, and Illinois.

1881. Pleurotomaria tabulata. White, 2d Ann. Rep. Dep Stat. and Geol. Ind., p. 519, pl. 18, figs. 4, 5.

Coal Measures: Rush Creek, Posey County, Indiana.

1884. Pleurotomaria tabulata. White, 13th Rep. Geol. Surv. Ind., p. 160, pl. 32, figs. 4, 5.

Upper Coal Measures: Rush Creek, Posey County; Wagon-defeat Creek, Sullivan County, and Warrick County, Indiana.

1894. Pleurotomaria tabulata. Keyes, Mo. Geol. Surv., vol. 5, p. 142. Upper Coal Measures: Kansas City, Missouri.

#### Pleurotomaria taggarti Meek.

1874. Pleurotomaria Taggarti. Meek, Ann. Rep. U. S. Geol. and Geog. Surv. Terr., p. 231.

Carboniferous: Canyon of Four-Mile Creek, Colorado.

1880. Pleurotomaria taggerti. White, Cont. to Inv. Pal., No. 6, p. 140, pl. 34, figs, 1a, b.

Carboniferous: Near Horseshoe Mountain, South Park, Colorado.

#### Pleurotomaria tectoria Winchell.

1863. Pleurotomaria tectoria. Winchell, Proc. Acad. Nat. Sci. Phil., p. 19. Yellow S. S.: Burlington, Iowa.

#### Pleurotomaria tenuicincta Meek and Worthen.

1860. Pleurotomaria tenuicinota. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 459.

Upper Coal Measures: Springfield, Illinois.

#### Pleurotomaria tenuicincta Meek and Worthen—Continued.

1866. Pleurotomaria tenuicincia. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 355, pl. 28, figs. 3a-d.

Upper Coal Measures: Springfield, Illinois.

1897. Pleurotomaria tenuicincta. Smith, Proc. Am. Phil. Soc., vol. 35, p. 40. Upper Coal Measures: Poteau Mountain, Indian Territory.

#### Pleurotomaria tenuistriata Shumard.

1860. Pleurotomaria tenuistriata. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 625.

Coal Measures: Young County, Texas, near the Indian Reservation.

Pleurotomaria textiligera. See Pleurotomaria mississippiensis.

#### Pleurotomaria trilineata Hall.

1856. Pleurotomaria trilineata. Hall, Trans. Albany Inst., vol. 4, p. 25. St. Louis L. S.: Spergen Hill and Bloomington, Indiana.

1882. Pleurotomaria trilineata. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 80, pl. 9, fig. 20.

St. Louis Group: Spergen Hill and Bloomington, Indiana; Alton, Illinois. 1883. Pleurotomaria trilineata. Hall, 12th Rep. Geol. Surv. Ind., p. 357, pl. 32,

St. Louis Group: Spergen Hill, Lanesville, and Bloomington, Indiana.

## Pleurotomaria trochiformis. See Pleurotomaria cooperensis.

Pleurotomaria tumida. See Strophostylus grayvillensis.

#### Pleurotomaria turbiniformis Meek and Worthen.

1860. Pleurotomaria bicarinata. McChesney, Desc. New Spec. Pal. Foss., p. 90. (Not P. bicarinata, Sowerby, 1818.)
Coal Measures: Lasalle, Illinois.

1860. Pleurotomaria turbiniformis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 461.

Upper Coal Measures: Lasalle, Illinois.

1866. Pleurotomaria turbiniformis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 359, pl. 28, figs. 8a-c.
Upper Coal Measures: Lasalle, Illinois.

1884. Pleurotomaria turbiniformis. White, 13th Rep. Geol. Surv. Ind., p. 160, pl. 32, figs. 7, 8.

Upper Coal Measures: Lasalle and Paris, Illinois; Vigo County, Indiana. 1894. *Pleurotomaria turbiniformis*. Keyes, Mo. Geol. Surv., vol. 5, p. 135, pl. 48, figs. 6a, b.

Upper Coal Measures: Kansas City, Missouri.

## Pleurotomaria vadosa Hall.

1860. Pleurotomaria radosa. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 108. Goniatite L. S.: Rockford, Indiana.

1862. Pleurotomaria vadosa. Winchell, Proc. Acad. Nat. Sci. Phil., p. 423. Marshall S. S. (†): Western part of Michigan.

1865. Pleurotomaria radosa. Winchell, Proc. Acad. Nat. Sci. Phil., p. 132. Marshall Group: Rockford, Indiana.

1870. Pleurotomaria vadosa. Winchell, Proc. Am. Phil. Soc., vol. 1, p. 257. Waverly Group: Sciotoville and Rockville, Ohio.

1888. Pleurotomaria vadosa? Herrick, Bull. Den. Univ., vol. 4, pl. 7, fig. 11. Waverly Group: 1 mile east of Harlan, Ohio.

1895. Pleurotomaria vadosa? Herrick, Geol. Surv. Ohio, vol. 7, pl. 18, fig. 11.

Near Base of Cuyahoga Shale: Near Harlem, Ohio.

## Pleurotomaria valvatiformis Meek and Worthen.

- 1866. Pleurotomaria valvatiformis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 273.
  - Lower Coal Measures: Hodge's Creek, Macoupin County, Illinois.
- 1873. Pleurotomaria? valvatiformis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 602, pl. 29, fig. 9.

  Coal Measures: Hodge's Creek Macounin County Illinois
  - Coal Measures: Hodge's Creek, Macoupin County, Illinois.
- 1891. Pleurotomaria valvatiformis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 254. Lower Coal Measures: Des Moines, Iowa.
- 1894. Pleurotomaria valvatiformis. Keyes, Mo. Geol. Surv., vol. 5, p. 137. Upper Coal Measures: Kansas City, Missouri.

## Pleurotomaria whitii Winchell.

1862. Pleurotomaria Whitii. Winchell, Proc. Acad. Nat. Sci. Phil., p. 423. Marshall S. S. (†): Western Michigan.

## Pleurotomaria wortheni Hall.

- 1856. Pleurotomaria wortheni. Hall, Trans. Albany Inst., vol. 4, p. 23.
  St. Louis L. S.: Spergen Hill and Bloomington, Indiana.
- 1858. Pleurotomaria wortheni. Hall, Geol. Iowa, vol. 1, pt. 2, p. 664, pl. 23, 11gs. 13a-d.
  - Warsaw L. S.: Spergen Hill and Bloomington, Indiana.
- 1882. Pleurotomaria Worthens. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 81, pl. 9, fig. 4.
  - St. Louis Group: Spergen Hill and Bloomington, Indiana.
- 1883. Pleurotomaria Wortheni. Hall, 12th Rep. Geol. Surv. Ind., p. 356, pl. 32, fig. 4. St. Louis Group: Bloomington, Spergen Hill, and Lanesville, Indiana.

## Pleurotomaria (species undetermined).

- 1862. Pleurotomaria humilis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 424. (Not P. humilis Hall, 1856.)
  - Marshall S. S. (1): Western Michigan.
- 1863. Pleurotomaria? Chesterensis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 99. (Not P. chesterensis M. & W., 1860.)
  Upper Archimedes L. S.: Chester, Illinois.
- 1868. Pleurotomaria. Rogers, Geol. Rep. Penn., vol. 2, p. 833, fig. 691.
- 1873. Pleurotomaria (sp. undet.). Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 19, fig. 1.
  Keokuk Group.
- 1873. Pleurotomaria? (sp. undet.). Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 26, fig. 6b.
  Coal Measures.
- 1887. Pleurotomaria sp. 7 Herrick, Bull. Den. Univ., vol. 2, p. 21, pl. 2, figs. 11, 13. Coal Measures: Flint Ridge, Ohio.
- 1888. Pleurotomaria sp. Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 38. Waverly Group: Ohio.
- 1889. Pleurotomaria sp. Herrick, Am. Geol., vol. 3, pl. 4, fig. 14. Bedford Shale: Ohio.
- 1897. Pleurotomaria sp. Smith, Proc. Am. Phil. Soc., vol. 35, p. 40.
  Lower Coal Measures: Conway County, Franklin County, and Pope County, Arkansas.

## (PLICATULA Lamark, 1809.)

# Plicatula striato-costata. See Meekella striato-costata.

## POLIOCHERA Scudder, 1884.

## Poliochera punctulata Scudder.

1884. Poliochera punctulata. Scudder, Proc. Am. Acad. Arts and Sci., vol. 20, p. 16. Carboniferous: Mazon Creek, Illinois.

#### Poliochera punctulata Scudder-Continued.

1890. Poliochera punctulata. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 444, pl. 39, figs. 2, 6.

Carboniferous: Mazon Creek, Illinois.

1890. Poliochera punctulata. Scudder, Foss. Insc. N. A., vol. 1, p. 420, pl. 31, figs. 2. 6.

Carboniferous: Mazon Creek, Illinois.

## POLYERNUS Scudder, 1885.

## Polvernus complanatus Scudder.

1885. Polyernus complanatus. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 343, pl. 32, figs. 8, 11.

Carboniferous: Mazon Creek, Illinois.

1890. Polyernus complanatus. Scudder, Foss. Insc. N. A., vol. 1, p. 307, pl. 18, figs. 8, 11.

Carboniferous: Mazon Creek, Illinois.

## Polyernus laminarum Scudder.

1885. Polyernus laminarum. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 343, pl. 31, fig. 1.

Carboniferous: Pittston, Pennsylvania.

1890. Polyernus laminarum. Scudder, Foss. Insc. N. A., vol. 1, p. 307, pl. 17, fig. 1. Carboniferous: Pittston, Pennsylvania.

## (POLYPHEMOPSIS Portlock, 1843.)

Polyphemopsis chrysalis. See Bulimorpha chrysalis.

Polyphemopsis fusiformis. See Soleniscus attenuatus.

Polyphemopsis inornata. See Bulimorpha inornata.

Polyphemopsis keokuk. See Bulimorpha ! keokuk.

Polyphemopsis melanoides. See Bulimorpha melanoides.

Polyphemopsis nitidula. See Bulimorpha nitidula.

Polyphemopsis peracuta. See Bulimopha? peracuta.

## POLYPORA McCoy, 1845.

## Polypora approximata Ulrich.

1859. Polypora biarmica. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 450. (Not P. biarmica Keyserling.)

Upper Archimedes L. S.: Chester, Illinois.

1890. Polypora approximata. Ulrich, Geol. Surv. Ill., vol. 8, p. 599, pl. 61, figs. 5, 5a. Chester Group: Chester, Illinois; Sloan's Valley and Litchfield, Kentucky.

## Polypora biarmica Keyserling.

1846. Polypora biarmica. Keyserling, Beob. Reise Petschora Land, p. 191, Tab. 3, fig. 10.

1878. Polypora biarmica. Etheridge, Quart. Jour. Geol. Soc. Lond., vol. 34, p. 622, pl. 28, fig. 4.

Carboniferous: Feilden Isthmus, latitude 82° 43'. Also see Polypora strayala and Polypora approximata.

## Polypora biseriata Ulrich.

1890. Polypora biseriata. Ulrich, Geol. Surv. Ill., vol. 8, p. 592, pl. 60, figs. 4-4b. Warsaw Beds: Monroe County, Illinois; Warsaw, Illinois.

! St. Louis L. S.: ! Barrett's Station, Missouri.

Bull. 153----30

#### Polpyora biseriata Ulrich—Continued.

1894. Polypora biscriata † Keyes, Mo. Geol. Surv., vol. 5, p. 29. St. Louis L. S.: Barrett Station, Missouri.

#### Polypora burlingtonensis Ulrich.

1890. Polypora burlingtonensis. Ulrich, Geol. Surv. Ill., vol. 8, p. 587, pl. 59, figs. 2, 2a.

Burlington L. S.: Burlington, Iowa; Henderson County, Illinois.

## Polypora cestriensis Ulrich.

1890. Polypora cestriensis. Ulrich, Geol. Surv. Ill., vol. 8, p. 594, pl. 55, figs. 4-4b; pl. 60, figs. 7-7c.

Chester Group: Chester, Kaskaskia and near Anna, Illinois; Litchfield and Sloan's Valley, Kentucky.

1894. Polypora cestriensis. Keyes, Mo. Geol. Surv., vol. 5, p. 29.

Kaskaskia L. S.: Ste. Genevieve, Missouri.

## Polypora complanata Ulrich.

1890. Polypora complanata. Ulrich, Geol. Surv. Ill., vol. 8, p. 597, pl. 60, figs. 6-6c. Chester Group: Chester, Illinois.

## Polypora corticosa Ulrich.

1890. Polypora corticosa. Ulrich, Geol. Surv. Ill., vol. 8, p. 596, pl. 60, figs. 5-5c; pl. 61, fig. 1.

Chester Group: Chester, Illinois.

1894. Polypora corticosa. Keyes, Mo. Geol. Surv., vol. 5, p. 30. Kaskaskia L. S.: Chester, Illinois.

## Polypora crassa Ulrich.

1890. Polypora crassa. Ulrich, Geol. Surv. Ill., vol. 8, p. 603, pl. 61, figs. 8, 8a. Upper Coal Measures: Sugar Creek, Sangamon County, Illinois.

#### Polypora distincta Ulrich.

1890. Polypora distincta. Ulrich, Geol. Surv. Ill., vol. 8, p. 603, pl. 61, figs. 7, 7a. Upper Coal Measures: Springfield, Illinois.

#### Polypora fastuosa Foerste.

1887. Polypora fastuosa. Foerste, Bull. Den. Univ., vol. 2, p. 82, pl. 7, figs. 9a-d. Coal Measures: Flint Ridge and Bald Hill, Ohio.

## Polypora gracilis Prout.

1860. Polypora gracilis. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 580.

Warsaw L. S.: Warsaw, Illinois.

1866. Polypora gracilis. Prout, Geol. Surv. Ill., vol. 2, p. 422, pl. 21, figs. 1, 1a. Keokuk L. S.: Warsaw, Illinois.

1888. Polypora gracilis. Ulrich, Bull. Den. Univ., vol. 4, p. 73.

Waverly Group: Richfield and Sciotoville, Ohio.

1890. Polypora (†) gracilis. Ulrich, Geol. Surv. Ill., vol. 8, p. 590, pl. 61, figs. 10, 10a.

Keokuk Group: Warsaw and Nauvoo, Illinois; Keokuk, Iowa; Kings Mountain, Kentucky.

1894. Polypora gracilis. Keyes, Mo. Geol. Surv., vol. 5, p. 28. Keokuk L. S.: Warsaw, Illinois.

## ?Polypora grandis Toula.

1875. Polypora grandis. Toula, N. Jahrb. fur Min. Geol. and Pal., p. 230, taf. 9, figs. 7a, b.

Permo-Carboniferous: Spitzbergen.

1878. Polypora grandie? Etheridge, Quart. Jour. Geol. Soc. Lond., vol. 34, p. 621. Carboniferous: Feilden Isthmus, latitude 82° 43'.

## Polypora hallana Prout. (Not P. hallana Nicholson, 1874.)

- 1860. Polypora Halliana. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 580. Warsaw L. S.: Warsaw, Illinois.
- 1866. Polypora Halliana. Prout, Geol. Surv. Ill., vol. 2, p. 421, pl. 21, figs. 4-4b. St. Louis Group: Warsaw, Illinois.
- 1890. Polypora halliana. Ulrich, Geol. Surv. Ill., vol. 8, p. 587, pl. 59, figs. 5-5c. Keokuk Group: Numerous localities in Iowa and Illinois. Warsaw Beds: Warsaw, Illinois.
- 1894. Polypora halliana. Keyes, Mo. Geol. Surv., vol. 5, p. 28. Keokuk L. S.: Clark County, Missouri.

## Polypora impressa Ulrich.

1888. Polypora impressa. Ulrich, Bull. Den. Univ., vol. 4, p. 72, pl. 13, figs. 8, 8a. Cuyahoga Shale: Richfield, Ohio.

## Polypora maccoyana Ulrich.

1890. Polypora maccoyana. Ulrich, Geol. Surv. Ill., vol. 8, p. 588, pl. 59, figs. 3-3d.

Keokuk Group: Nauvoo and near Plymouth, Illinois; Keokuk and Bentonsport, Iowa.

1894. Polypora maccoyana. Keyes, Mo. Geol. Surv., vol. 5, p. 28. Keokuk L. S.: Keokuk, Iowa.

Polypora marginata Geinitz. [Not P. marginata McCoy, 1844.] See Polypora submarginata.

#### ? Polypora megastoma De Koninck.

1862. Polypora megastoma. De Koninck, Quart. Jour. Geol. Soc. Lond., vol. 19, p. 5, pl. 2, fig. 3.
Upper Carboniferous: India.

1878. Polypora megastoma? Etheridge, Quart. Jour. Geol. Soc. Lond., vol. 34, p. 621

Carboniferous: Fielden Isthmus, latitude 82° 43'.

#### Polypora mexicana Prout.

1858. Polypora Mericana. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 270. Permian: Jornada del Muerto, New Mexico.

1859. Polypora Mexicana. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 451, pl. 16, figs. 2-2b.

#### Polypora nodocarinata Ulrich.

1890. Polypora nodocarinata. Ulrich, Geol. Surv. Ill., vol. 8, p. 601, pl. 61, figs. 9, 9a.

Upper Coal Measures: Crooked Creek, near Centralia, Illinois; Macoupin County, Illinois.

## Polypora radialis Ulrich.

1888. Polypora radialis. Ulrich, Bull. Den. Univ., vol. 4, p. 74.

Waverly Group: Near Newark, Ohio.

1890. Polypora radialis. Ulrich, Geol. Surv. Ill., vol. 8, p. 591, pl. 60, figs. 1-1d. Keokuk Group: Keokuk, Iowa.

1894. Polypora radialis. Keyes, Mo. Geol. Surv., vol. 5, p. 29. Keokuk L. S.: Keokuk, Iowa.

## Polypora retrorsa Ulrich.

1890. Polypora retrorsa. Ulrich, Geol. Surv. Ill., vol. 8, p. 591, pl. 59, figs. 6-6d. Keckuk Group: Keckuk, Iowa.

1894. Polypora retrosa. Keyes, Mo. Geol. Surv., vol. 5, p. 29. Keokuk L. S.: Keokuk, Iowa.

#### Polypora simulatrix Ulrich.

- 1890. Polypora simulatrix. Ulrich, Geol. Surv. Ill., vol. 8, p. 589, pl. 59, figs. 4-4b. Keokuk Group: Henderson County, Nauvoo and Warsaw, Illinois; Keokuk and Bentonsport, Iowa.
- 1894. Polypora simulatrix. Keyes, Mo. Geol. Surv., vol. 5, p. 28. Keokuk L. S.: Keokuk, Iowa.

# Polypora spininodata Ulrich.

- 1890. Polypora spininodata. Ulrich, Geol. Surv. Ill., vol. 8, p. 594, pl. 60, fig. 3. Warsaw Beds: Warsaw, Illinois.
- 1894. Polypora spininodata. Keyes, Mo. Geol. Surv., vol. 5, p. 29. Keokuk L. S.: Warsaw. Illinois.

# Polypora spinulifera Ulrich.

- 1890. Polypora spinulifera. Ulrich, Geol. Surv. Ill., vol. 8, p. 598, pl. 61, figs. 2, 2a, 3, 3a, 4, 4a.
  - Chester Group: Monroe County and Chester, Illinois.
  - Coal Measures: Montgomery County, Illinois; near Red Oak, Iowa.
- 1894. Polypora spinulifera. Keyes, Mo. Geol. Surv., vol. 5, p. 30. Kaskaskia L. S.: Chester, Illinois.

# Polypora stragula White.

- 1866. Polypora biarmica (†) Geinitz, Carb. und Dyas in Nebr., p. 68, tab. 5, figs. 13a, b.
  - Nebraska City, Nebraska.
- 1872. Polypora (sp. undetermined.) Meek, U. S. Geol. Surv. Nebr., p. 155, pl. 7, fig. 6.
  - Upper Coal Measures: Nebraska City, Nebraska.
- 1874. Polypora stragula. White, Prelim. Rep. Inv. Foss., p. 19.
  - Carboniferons: Confluence of White Mountain and Black rivers, Arizona.
- 1877. Polypora stragula. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 108, pl. 7, figs. 4a, b.
  Carboniferous: Confluence of White Mountain and Black rivers, Arizona.

# Polypora submarginata Meek.

- 1866. *Polypora marginata*. Geinitz, Carb. und Dyas in Nebr., p. 69, tab. 5, figs. 11a, b, 12a, b.
  - Plattsmouth, Nebraska.
- 1872. Polypora submarginata. Meek, U. S. Geol. Surv. Nebr., p. 154, pl. 7, figs. 7a, b.
  - Upper Coal Measures: Nebraska City, Nebraska.
- 1890. Polypora submarginata. Ulrich, Geol. Surv. Ill., vol. 8, p. 602, pl. 61, figs. 6-6b.
  - Upper Coal Measures: Macoupin County, Illinois; Lasalle and Springfield, Illinois; near Red Oak, Iowa.
- 1894. Polypora submarginata. Keyes, Mo. Geol. Surv., vol. 5, p. 30.
  Upper Coal Measures: Kansas City, Missouri, † Red Oak, Iowa.

## Polypora tuberculata Prout. (Not P. tuberculata Nicholson, 1874.)

- 1859. Polypora tuberculata. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 449, pl. 18, fig. 3.
  - Upper Archimedes L. S.: Chester, Illinois.
- 1890. Polypora tuberculata. Ulrich, Geol. Surv. Ill., vol. 8, p. 595, pl. 60, fig. 8. Chester Group: Chester, Illinois; Litchfield, Kentucky.
- 1894. Polypora tuberculata. Keyes, Mo. Geol. Surv., vol. 5, p. 30. Kaskaskia L. S.: Chester, Illinois.

#### Polypora varsoviensis Prout.

1858. Polypora Varsoviensis. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 237. Warsaw, Illinois.

## Polypora varsoviensis Prout—Continued.

- 1859. Polypora Varsouviensis. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 451, pl. 15, figs. 3-3d.
- 1890. Polypora varsoriensis. Ulrich, Geol. Surv. Ill., vol. 8, p. 593, pl. 60, figs. 2-2b. Warsaw Beds: Monroe County and Warsaw, Illinois. St. Louis L. S.: Barrett's Station. Missouri.
- 1891. Polypora Varsouviensis? Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 578. Maxville L. S.: Newtonville, Ohio.
- 1894. Polypora varsoviensis. Keyes, Mo. Geol. Surv., vol. 5, p. 29. St. Louis L. S.: Barrett's Station, Missouri.
- 1895: Polypora Varsouviensis? Whitfield, Geol. Surv. Ohio, vol. 7, p. 467.
  Maxville L. S.: Newtonville, Ohio.

#### Polypora whitei Ulrich.

1890. Polypora whitei. Ulrich, Geol. Surv. Ill., vol. 8, p. 600, pl. 62, fig. 2.
Base of Coal Measures: Seville, Illinois.

#### Polypora whitoi var. insculpta Ulrich.

1890. Polypora whitei var. insculpta. Ulrich, Geol. Surv. Ill., vol. 8, p. 600, pl. 62, fig. 1.
Upper Coal Measures: Springfield, Illinois.

#### Polypora (species undetermined).

1876. Polypora —— ? ——. White, Powell's Rep. Geol. Uinta Mts., p. 89.

Lower Aubrey Group: Confluence of Grand and Green rivers, Utah.

1878. Polypora sp. Etheridge, Quart. Jour. Geol. Soc. Lond., vol. 34, p. 624. Carboniferous: Feilden Isthmus, latitude 82° 43'.

#### PONTOCYPRIS Sars.

## Pontocypris? acuminata Ulrich.

1891. Pontocypris (?) acuminata. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 210, pl. 17, figs. 8a-c.

Lower Waverly Group: Moot's Run, near Granville, Ohio.

# POPANOCERAS Hyatt, 1883.

# Popanoceras parkeri Heilprin.

1884. Ammonites Parkeri. Heilprin, Proc. Acad. Nat. Sci. Phil., p. 53, figs. 1, 2. Carboniferous: Wise County, Texas.

## Popanoceras walcotti White.

1889. Popanoceras walcotti. White, Am. Nat., vol. 23, p. 117, pl. 1, figs. 9-11.
Permian: Baylor County, Texas.

1891. Popanoceras walcotti. White, Bull. U. S. Geol. Surv., No. 77, p. 21, pl. 1, figs. 9-11.

Permian: Military Crossing of the Big Wichita, Baylor County, Texas.

# PORCELLIA Leveille, 1835.

# Porcellia crassinoda White and Whitfield.

1862. Porcellia crassinoda. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 303.

Chemung Group: Burlington, Iowa.

1889. Porcellia crassinoda. Keyes, Proc. Acad. Nat. Sci. Phil., p. 298. Kinderhook Group: Burlington, Iowa.

#### Porcellia nodosa Hall.

1860. Porcellia nodosa. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, p. 92. Burlington L. S.: Illinois.

#### Porcellia nodosa Hall—Continued.

1868. Poroellia nodosa. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 458, pl. 14, figs. 1a, b.

Kinderhook Group: Barry, Pike County, Illinois.

1889. Porcellia nodosa. Rowley, Am. Geol., vol. 3, p. 276. Lower Burlington Chert: Louisiana, Missouri.

1894. Porcellia nodosa. Keyes, Mo. Geol. Surv., vol. 5, p. 154, pl. 51, fig. 4. Burlington L. S.: Louisiana, Missouri.

## Porcellia obliquinoda White.

1862. Porcellia obliquinoda. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 21. Chemung S. S.: Burlington, Iowa.

## Porcellia peoriensis Worthen.

1884. Porcellia peoriensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 6.
Lower Coal Measures: Peoria County, Illinois.

1890. Porcellia peoriensis. Worthen, Geol. Surv. Ill., vol. 8, p. 138, pl. 23, figs. 4a, b. Lower Coal Measures: Peoria County, Illinois.

#### Porcellia rectinoda Winchell.

1863. Porcellia rectinoda. Winchell, Proc. Acad. Nat. Sci. Phil., p. 18. Yellow S. S.: Burlington, Iowa.

# POROBLATTINA Scudder, 1885.

## Poroblattina complexinervis Scudder.

1895. Poroblattina complexinervis. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 139, pl. 11, fig. 14.

Lower Permian: Cassville, West Virginia.

## Poroblattina fossa Scudder.

1895. Poroblattina fossa. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 137, pl. 11, fig. 15.

Lower Permian: Cassville, West Virginia.

# Poroblattina gratiosa Scudder.

1895. Poroblattina gratiosa. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 136, pl. 11, fig. 13.

Lower Permian: Cassville, West Virginia.

#### Poroblattina longingua Scudder.

1895. Poroblattina longinqua. Seudder, Bull.U.S.Geol. Surv. No. 124, p. 135, pl. 11, fig. 12.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

## Poroblattina ohioensis Scudder.

1895. Poroblattina ohioensis. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 138, pl. 11, fig. 1.

Lower Coal Measures: Wills Creek, Richmond, Ohio.

# POSIDONIA Bronn, 1837.

#### Posidonia clathrata Lea.

1853. Posidonia † clathrata. Lea, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 205, pl. 20, fig. 1b.

Coal Formation: Wilkesbarre, Pennsylvania

## Posidonia distans Lea.

1853. Posidonia 7 distans. Lea, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 205, pl. 20, fig. 3b.

Coal Formation: Wilkesbarre, Pennsylvania.

#### Posidonia moorei Gabb.

1859. Posidonia Moorei. Gabb, Proc. Acad. Nat. Sci. Phil., p. 297. Coal Measures: Fort Belknap, Texas.

1860. Posidonia Moorei. Gabb, Proc. Acad. Nat. Sci. Phil., p. 55, pl. 1, fig. 2.

# Posidonia perstriata Lea.

1853. Posidonia ? perstriata. Lea, Jour. Acad. Nut. Sci. Phil. (2), vol. 2, p. 205, pl. 20, fig. 3a.

Coal Formation: Wilkesbarre, Pennsylvania.

#### POSIDONOMYA Bronn, 1837.

#### Posidonomya ambigua Winchell.

1863. Posidonomya t ambigua. Winchell, Proc. Acad. Nat. Sci. Phil., p. 10. Yellow S. S.: Burlington, Iowa.

#### Posidonomya fracta Meek.

1875. Posidonomya fracta. Meek, Pal. Ohio, vol. 2, p. 333, pl. 19, figs. 7a, b. Coal Measures: Flint Ridge, Ohio.

1887. Posidonomya fracta. Herrick, Bull. Den. Univ., vol. 2, p. 43. Coal Measures: Flint Ridge, Ohio.

# Posidonomya fragilis Herrick.

1888. Posidonomya (Streblopteria) fragilis. Herrick, Bull. Den. Univ., vol. 3, p. 59, pl. 6, fig. 1.

Waverly Group: Licking County, Ohio.

1895. Posidonomya (Streblopteria) fragilis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 24, fig. 18.

Cuyahoga Shale: Moot's Run, Ohio.

# Posidonomya fragosa Meek.

1877. Posidonomya † fragosa. Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 92, pl. 3, figs. 8, 8a.

Devonian or Carboniferous: White Pine Mountains, near Hamilton, Nevada.

# Posidonomya lasallensis Miller and Gurley.

1896. Posidonomya lasallensis. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 12, pl. 1, figs. 17, 18. Coal Measures: Lasalle, Illinois.

## Posidonomya mesambonata Winchell.

1862. Posidonomya mesambonata. Winchell, Proc. Acad. Nat. Sci. Phil., p. 421. Marshall Group: Marshall and Moscow, Michigan.

## Posidonomya romingeri Winchell.

1862. Posidonomya Romingeri. Winchell, Proc. Acad. Nat. Sci. Phil., p. 420. Marshall Group: Marshall, Michigan.

## Posidonomya striata Stevens.

1858. Posidonomya striata. Stevens, Am. Jour. Sci. (2), vol. 25, p. 265. Coal Measures: Summit, Ohio.

## Posidonomya whiteana. Winchell.

1862. Posidonomya Whiteana. Winchell, Proc. Acad. Nat. Sci. Phil., p. 420. Marshall Group: Marshall, Michigan.

## POTERIOCERAS McCoy, 1844.

# Poterioceras missouriense Miller.

1892. Poterioceras missouriense. Miller, Adv. Sheets 18th Rep. Geol. Surv. Ind., p. 70, pl. 11, fig. 6.
Chouteau L. S: Near Sedalia, Missouri.

#### Poterioceras missouriense Miller—Continued.

1894. Poterioceras missouriense. Miller, 18th Rep. Geol. Surv. Ind., p. 324, pl. 11 fig. 6.

Chouteau L. S: Near Sedalia, Missouri.

## Poterioceras jerseyense Miller and Gurley.

1896. Poterioceras jerseyense. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 32, pl. 4, fig. 3.

Kinderhook Group: Jersey County, Illinois.

# POTERIOCRINUS Miller, 1821.

# Poteriocrinus agnatus Miller.

1891. Poteriocrinus agnatus. Miller, Adv. Sheets 17th Rep. Geol. Surv. Ind., p. 43, pl. 8, figs. 6, 7.

Keokuk Group: Boonville, Missouri.

1892. Poteriocrinus agnatus. Miller, 17th Rep. Geol. Surv. Ind., p. 653, pl. 8, figs. 6, 7.

Keokuk Group: Boonville, Missouri.

## Poteriocrinus albersi Miller and Gurley.

1896. Poteriocrinus albersi. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 29, pl. 2, figs. 15-17.

Kaskaskia Group: Monroe County, Illinois.

# Poteriocrinus altonensis Miller and Gurley.

1895. Poteriocrinus altonensis. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 62, pl. 4, figs. 3, 4.
St. Louis Group: Alton, Illinois.

#### Poteriocrinus amænus Miller.

1891. Poteriocrinus amænus. Miller, Adv. Sheets 17th Rep. Geol. Surv. Ind., p. 45, pl. 9, fig. 6.

Keokuk Group: Indian Creek, Montgomery County, Indiana.

1892. Poteriocrinus amænus. Miller, 17th Rep. Geol. Surv. Ind., p. 655, pl. 9, fig. 6. Keokuk Group: Indian Creek, Montgomery County, Indiana.

# Poteriocrinus anomalus Wetherby.

1880. Poteriocrinus anomalos. Wetherby, Jour. Cinn. Soc. Nat. Hist., vol. 3, p. 158, pl. 5, figs. 6-6b.

Kaskaskia Group: Pulaski County, Kentucky.

## Poteriocrinus aqualis. See Scaphiocrinus æqualis.

#### Poteriocrinus arachnæformis Worthen.

1882. Poteriocrinus arachnæformis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 13.

Keokuk L. S: Warsaw, Illinois.

1883. Poteriocrinus arachnæformis. Worthen, Geol. Surv. Ill., vol. 7, p. 281, pl. 28, fig. 12.

Keokuk L. S: Warsaw, Illinois.

## Poteriocrinus arcanus Miller and Gurley.

1890. Poteriocrinus arcanus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 348, pl. 5, fig. 4.

Keokuk Group: Washington County, Indiana.

## Poteriocrinus arrectarius Miller and Gurley.

1896. Poteriocrinus arrectarius. Miller and Gurley, Bull. No. 9, 111. State Mus. Nat. Hist., p. 33, pl. 4, fig. 6.

St. Louis Group: Alton, Illinois.

Poteriocrinus asper. See Scaphiocrinus extensus.

Poteriocrinus asperatus. See Woodocrinus asperatus.

Poteriocrinus barrisi. See Cyathocrinus barrisi.

Poteriocrinus bayensis. See Decadocrinus bayensis.

Poteriocrinus bisselli. See Scytalocrinus bisselli.

## Poteriocrinus blairi Miller and Gurley.

1896. Poteriocrinus blairi. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 61, pl. 4, figs. 1, 2.
Burlington Group: Sedalia, Missouri.

#### Poteriocrinus boonvillensis Miller.

1891. Poteriocrinus boonvillensis. Miller, Adv. Sheets 17th Rep. Geol. Surv. Ind., p. 42, pl. 8, figs. 3, 4.

Keokuk Group: Boonville, Missouri.

1892. Poteriocrinus boonvillensis. Miller, 17th Rep. Geol. Surv. Ind., p. 652, pl. 8, figs. 3, 4.

Keokuk Group: Boonville, Missouri.

# Poteriocrinus bozemánensis Miller and Gurley.

1896 Poteriocrinus bozemanensis. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 82, pl. 5, figs. 10, 11.

Subcarboniferous: Bridger Mountains, near Bozeman, Montana.

## Poteriocrinus briærius. See Scaphiocrinus briærius.

#### Poteriocrinus brittsi Miller.

1891. Poteriocrinus Brittsi. Miller, Bull. Geol. Surv. Mo., No. 4, p. 30, pl. 4, figs. 5, 6. Keokuk Group: Boonville, Missouri.

1894 Poteriocrinus brittsi. Keyes, Mo. Geol. Surv., vol. 4, p. 211. Keokuk L. S.: Boonville, Missouri.

## Poteriocrinus broadheadi Miller and Gurley.

1895. Poteriocrinus broadheadi. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 63, pl. 4, figs. 7, 8.

Chouteau L.S.: Near Sedalia, Missouri.

Poteriocrinus burketi. See Scaphiocrinus burketi.

Poteriocrinus bursæformis. See Woodocrinus bursæformis.

#### Poteriocrinus calvoulus Hall.

1858. Poteriocrinus calyculus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 553, pl. 9, figs. 6a-c. Burlington L. S.: Burlington, Iowa.

1860. Peteriocrinus calyculus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, pl. 2, fig. 11.

1872. Scaphiocrinus calyculus. Hall, Photo. Plates of Crinoids, pl. 6, fig. 1.

## Poteriocrinus cantonensis Miller and Gurley.

1890. Poteriocrinus cantonensis. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 358, pl. 8, figs. 3, 4.

Keokuk Group: Near Canton, Indiana.

Poteriocrinus carbonarius. See Graphiocrinus carbonarius.

Poteriocrinus carinatus. See Scaphiocrinus carinatus and Woodocrinus liliiformis.

## Poteriocrinus circumtextus Miller and Gurley.

1894. Poteriocrinus circumtextus. Miller and Gurley, Bull. No. 5, Ill. State Mus. Nat Hist., p. 31, pl. 2, figs. 29, 30.

Keokuk Group: Crawfordsville, Indiana.

Poteriocrinus claytonensis. See Woodocrinus claytonensis.

# Poteriocrinus clytis Worthen.

1882. Poteriocrinus clytis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 16. St. Louis L. S.: Monroe County, Illinois.

1883. Poteriocrinus clytis. Worthen, Geol. Surv. Ill., vol. 7, p. 294, pl. 30, fig. 10. St. Louis L. S.: Monroe County, Illinois.

Also see Scaphiocrinus venustus.

Poteriocrinus columbiensis. See Decadocrinus columbiensis.

Poteriocrinus concinnus. See Woodocrinus concinnus.

Poteriocrinus coreyi. See Scytalocrinus grandis.

Poteriocrinus corycia. See Scaphiocrinus corycia.

# Poteriocrinus coryphæus Miller.

1891. Poteriocrinus coryphœus. Miller, Adv. Sheets 17th Rep. Geol. Surv. Ind., p. 44, pl. 9, fig. 1.

Keokuk Group: Indian Creek, Montgomery County, Indiana.

1892. Poteriocrinus coryphœus. Miller, 17th Rep. Geol. Surv. Ind., p. 654, pl. 9, fig. 4.

Keokuk Group: Indian Creek, Montgomery County, Indiana.

Poteriocrinus coxanus. See Scaphiocrinus coxanus.

# Poteriocrinus crawfordsvillensis Miller and Gurley.

1890. Poteriocrinus crawfordsvillensis. Miller and Gurley, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 23, pl. 4, fig. 8.

Keokuk Group: Crawfordsville, Indiana.

1890. Poteriocrinus crawfordsvillensis. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 344, pl. 4, fig. 8.

Keokuk Group: Crawfordsville, Indiana.

Poteriocrinus crineus. See Scaphiocrinus crineus.

Poteriocrinus cultidactylus. See Scaphiocrinus cultidactylus.

Poteriocrinus decadactylus. See Scytalocrinus decadactylus.

Poteriocrinus dilatatus. See Cœliocrinus dilatatus.

# Poteriocrinus doris Hall.

1861. Scaphiocrinus doris. Hall, Desc. New Spec. Crin., p. 7. Burlington L. S.

1861. Scaphiocrinus doris. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 312. Burlington L. S.: Burlington, Iowa.

## Poteriocrinus douglassi Miller and Gurley.

1896. Poteriocrinus douglassi. Miller and Gurley, Bull. No. 10, Ill. State Mus. Nat. Hist., p. 83, pl. 5, figs. 16, 17.

Subcarboniferous: Bridger Mountains, Bozeman, Montana.

#### Poteriocrinus elsahensis Worthen.

1890. Poteriocrinus elsahensis. Worthen, Geol. Surv. Ill., vol. 8, p. 88, pl. 14, fig. 5. Kinderhook Group: Near Elsah, Jersey County, Illinois.

Poteriocrinus enormis. See Cyathocrinus enormis.

Poteriocrinus fountainensis. See Decadocrinus fountainensis.

Poteriocrinus fusiformis. See Scytalocrinus macrodactylus.

# Poteriocrinus genista Miller and Gurley.

1890. Poteriocrinus genista. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 357, pl. 7, fig. 3.

Kinderhook Group: Legrand. Iowa.

# Poteriocrinus granilineus Miller and Gurley.

1890. Poteriocrinus granilineus. Miller and Gurley, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 22, pl. 4, fig. 7.

Keokuk Group: Crawfordsville, Indiana.

1890. Poteriocrinus granitmeus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 343, pl. 4, fig. 7.

Keokuk Group: Crawfordsville, Indiana.

# Poteriocrinus hamiltonensis. See Scytalocrinus robustus.

## Poteriocrinus hammondi Miller and Gurley.

1894. Poteriocrinus hammondi. Miller and Gurley, Bull. No. 5, Ill. State Mus. Nat. Hist., p. 35, pl. 3, figs. 7, 8. Kinderhook Group: Legrand, Iowa.

# Poteriocrinus hardinensis Worthen.

1873. Poteriocrinites Hardinensis. Worthen, Geol. Surv. Ill., vol. 5, p. 533, pl. 20, fig. 10.

St. Louis L. S.: Roseclare, Hardin County, Illinois.

Poteriocrinus hemisphericus. See Ceriocrinus hemisphericus.

Poteriocrinus hoveyi. See Scytalocrinus robustus.

#### Poteriocrinus illinoisensis Worthen.

1882. Poteriocrinus illinoiensis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 19.

Warsaw Beds: Warsaw, Illinois.

1883. Poteriocrinus Illinoiensis. Worthen, Geol. Surv. Ill., vol. 7, p. 289, pl. 28, figs. 17.

Warsaw Beds: Warsaw, Illinois.

Poteriocrinus indianensis. See Scytalocrinus indianensis.

Poteriocrinus iowensis. See Scaphiocrinus iowensis.

Poteriocrinus jesupi. See Scaphiocrinus swallovi.

Poteriocrinus kaskaskiensis. See Scaphiocrinus kaskaskiensis.

Poteriocrinus keokuk. See Scaphiocrinus keokuk.

#### Poteriocrinus labyrinthicus Miller and Gurley.

1896. Poteriocrinus lubyrinthicus. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 34, pl. 4, fig. 7.

Keokuk Group: Boonville, Missouri.

#### Poteriocrinus lasallensis Worthen.

1875. Poteriocrinus La Sallensis. Worthen, Geol. Surv. Ill., vol. 6, p. 526, pl. 32, fig. 3.

Upper Coal Measures: Lasalle, Illinois.

Poteriocrinus latidactylus. See Scaphiocrinus latidactylus.

## Poteriocrinus lautus Miller and Gurley.

1896. Poteriocrinus lautus. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 30, pl. 2, figs. 18, 19.

Keokuk Group: Boonville, Missouri.

# Poteriocrinus legrandensis Miller and Gurley.

1890. Poteriocrinus legrandensis. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 357, pl. 7, figs. 4-6.

Kinderhook Group: Legrand, Iowa.

#### Poteriocrinus lepidus Hall.

1861. Poteriocrinus lepidus. Hall, Desc. New Spec. Crin., p. 6. Burlington L. S. . Poteriocrinus lepidus Hall—Continued.

1861. Poteriocrinus lepidus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 304. Burlington L. S.: Burlington, Iowa.

Poteriocrinus longidactylus. See Scaphiocrinus missouriensis.

Poteriocrinus maccabei Miller and Gurley.

1894. Poteriocrinus maccabei. Miller and Gurley, Bull, No. 5, Ill. State Mus. Nat. Hist., p. 34, pl. 3, figs. 3-6.

Kinderhook Group: Legrand, Iowa.

Poteriocrinus maccabei var. decrepitus Miller and Gurley.

1894. Poteriocrinus maccabei var. decrepitus. Miller and Gurley, Bull. No. 5, Ill. State Mus. Nat. Hist., p. 36, pl. 3, figs. 9-12.

Kinderhook Group: Le Grand, Iowa.

Poteriocrinus macoupinensis Worthen.

1873. Poteriocrinites Macoupinensis. Worthen, Geol. Surv. Ill., vol. 5, p. 561, pl. 24, fig. 3.

Upper Coal Measures: Macoupin County, Illinois.

Poteriocrinus mammæformis Worthen.

1890. Poteriocrinus mammaeformis. Worthen, Geol. Surv. Ill., vol. 8, p. 91. Warsaw L. S.: Warsaw, Illinois,

Poteriocrinus meekianus. See Barycrinus meekianus.

Poteriocrinus milleri. See Decadocrinus milleri.

Poteriocrinus missouriensis. See Scaphiocrinus missouriensis.

Poteriocrinus montanænsis. See Scaphiocrinus montanænsis.

Poteriocrinus nauvocensis. See Scaphiocrinus nauvocensis.

Poteriocrinus neglectus Miller and Gurley.

1896. Poteriocrinus neglectus. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 31, pl. 4, figs. 3-5. Keokuk Group: Boonville, Missouri.

Poteriocrinus nodobasalis Worthen.

1890. Poteriocrinus nodobasalis. Worthen, Geol. Surv. Ill., vol. 8, p. 89, pl. 12, figs. 3, 3a; pl. 13, fig. 6.

St. Louis L. S.: Monroe County, Illinois.

Poteriocrinus norwoodi. See Scaphiocrinus norwoodi.

Poteriocrinus notabilis Meek and Worthen.

1869. Scaphiocrinus notabilis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 147.

Lower Burlington L. S.: Burlington, Iowa.

1873. Scaphiocrinus notabilis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 410, pl. 1, fig. 9.

Burlington L. S.: Burlington, Iowa.

Poteriocrinus obuncus White.

1862. Poteriocrinus ob-uncus. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 9. Lower Burlington L. S.: Burlington, Iowa.

Poteriocrinus occidentalis. See Agassizocrinus occidentalis and Scaphiocrinus occidentalis.

Poteriocrinus okawensis. See Scaphiocrinus okawensis.

Poteriocrinus orestes. See Scaphiocrinus orestes.

#### Poteriocrinus otterensis Worthen.

1882. Poteriocrinus otterensis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 14.

Keokuk L. S.: Otter Creek, Jersey County, Illinois.

1883. Poteriocrinus Otterensis. Worthen, Geol. Surv. Ill., vol. 7, p. 283, pl. 28, fig. 4.

Keokuk L. S.: Otter Creek, Jersey County, Illinois.

Poteriocrinus peculiaris. See Scaphiocrinus renustus.

Poteriocrinus pencilliformis. See Decadocrinus pencilliformis.

Poteriocrinus perplexus. See Parisocrinus perplexus.

Poteriocrinus pleias. See Decadocrinus pleias.

Poteriocrinus popensis. See Scaphiocrinus popensis.

Poteriocrinus proboscidialis. See Scaphiocrinus proboscidialis.

Poteriocrinus propinquus. See Scaphiocrinus propinquus.

# Poteriocrinus pulaskiensis Miller and Gurley.

1896. Poteriocrinus pulaskiensis. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 39, pl. 3, figs. 26, 27. Kaskaskia Group: Pulaski County. Kentucky.

Poteriocrinus rhombiferus. See Barycrinus rhombiferus.

Poteriocrinus richfieldensis. See Woodocrinus richfieldensis.

# Poteriocrinus rowleyi Worthen.

1890. Poteriocrinus rowleyi. Worthen, Geol. Surv. Ill., vol. 8, p. 90, pl. 14, fig. 9. Chester L. S.: Monroe County, Illinois.

## Poteriocrinus rugosus Shumard.

1858. Poteriocrinus rugosus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 223.
Coal Measures: Missouri River Bluffs and Putnam County, near Blackbird
Creek, Missouri.

Poteriocrinus salignoideus. See Parisocrinus salignoideus.

Poteriocrinus salteri. See Scaphiocrinus salteri.

# Poteriocrinus sampsoni Miller and Gurley.

1895. Poteriocrinus sampsoni. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 65, pl. 4, figs. 9, 10. Chouteau, L. S.: Sedalia, Missouri.

#### Poteriocrinus scopæ Miller and Gurley.

1890. Poteriocrinus scopæ. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 356, pl. 7, fig. 2.

Kinderhook Group: Legrand, Iowa.

1894. Poteriocrinus scopae. Miller and Gurley, Bull. No. 5, Ill. State Mus. Nat. Hist., p. 33, pl. 3, figs. 1, 2. Kinderhook Group, Legrand, Iowa.

Poteriocrinus sculptus. See Scaphiocrinus sculptus.

#### Poteriocrinus similis Worthen.

1882. Poteriocrinus similis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 23. Chester L. S.: Monroe County, Illinois.

1883. Poteriocrinus similis. Worthen, Geol. Surv. Ill., vol. 7, p. 295, pl. 30, fig. 12. Chester L. S.: Monroe County, Illinois.

Poteriocrinus solidus. See Scaphiocrinus æqualis.

# Poteriocrinus spartarius Miller and Gurley.

1890. Poteriocrinus spartarius. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 355, pl. 7, fig. 1.

Kinderhook Group: Legrand, Iowa.

Poteriocrinus spinobrachiatus. See Scaphiocrinus spinobrachiatus.

Poteriocrinus spinosus. See Scaphiocrinus spinosus.

# Poteriocrinus spinuliferous Worthen.

1884. Poteriocrinus spinuliferous. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 27.

Chester L. S.: Near Columbia, Monroe County, Illinois.

1890. Poteriocrinus spinuliferus. Worthen, Geol. Surv. Ill., vol. 8, p. 86, pl. 14, fig. 3.

Chester L. S.: Near Columbia, Monroe County, Illinois.

See also Zeacrinus spinuliferus.

Poteriocrinus subimpressus. See Scaphiocrinus subimpressus.

# Poteriocrinus subramosus Miller and Gurley.

1890. Poteriocrinus subramosus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 365, pl. 10, fig. 1.

Keokuk Group: Crawfordsville, Indiana.

Poteriocrinus subramulosus. See Scaphiocrinus swallovi.

Poteriocrinus subtumidus. See Scaphiocrinus subtumidus.

Poteriocrinus swallovi. See Scaphiocrinus swallovi.

Poteriocrinus talboti. See Scytalocrinus talboti.

Poteriocrinus tentaculatus. See Woodocrinus tentaculatus.

Poteriocrinus tenuibrachiatus. See Parisocrinus tenuibrachiatus.

Poteriocrinus tenuidactylus. See Scaphiocrinus æqualis, Scaphiocrinus obscurus, and Woodocrinus tentaculatus.

Poteriocrinus tumidus. See Agassizocrinus occidentalis.

## Poteriocrinus ulrichi Worthen.

1890. Poteriocrinus ulrichi. Worthen, Geol. Surv. Ill., vol. 8, p. 87, pl. 17, fig. 2. Keokuk L. S.: Keokuk, Iowa.

## Poteriocrinus vagulus Miller and Gurley.

1895. Poteriocrinus vagulus. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 46, pl. 4, figs. 10, 11.

Kaskaskia Group: Pulaski County, Kentucky.

#### Poteriocrinus validus Worthen.

1882. Poteriocrinus validus. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist, p. 18. Warsaw Beds: Warsaw, Illinois.

1883. Poteriocrinus validus. Worthen, Geol Surv. Ill., vol. 7, p. 287, pl. 28, fig. 16 Warsaw Beds: Warsaw, Illinois.

Poteriocrinus vanhornei. See Scytalocrinus vanhornei.

Poteriocrinus varsouviensis. See Scaphiocrinus varsouviensis.

Poteriocrinus ventricosus. See Cœliocrinus ventricosus.

Poteriocrinus venustus. See Scaphiocrinus venustus.

## Poteriocrinus verus Miller and Gurley.

1890. Poteriocrinus verus. Miller and Gurley, Jour. Cinn. Soc. Nat. Hist., vol 13, p. 24, pl. 4, fig. 9.

Keokuk Group: Crawfordsville, Indiana.

# Poteriocrinus verus Miller and Gurley—Continued.

1890. Poteriocrinus verus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 344, pl. 4, fig. 9.

Keokuk Group: Crawfordsville, Indiana.

Poteriocrinus wachsmuthi. See Graphiccrinus wachsmuthi.

# Poteriocrinus waltersi Rowley and Hare.

1891. Poteriocrinus waltersi. Rowley and Hare, The Kansas City Scientist, vol. 5, p. 101, pl. 2, fig. 15.

Lower Burlington L. S : Louisiana, Missouri

Poteriocrinus wetherbyi. See Scytalocrinus wetherbyi.

#### Poteriocrinus whitei Hall

1861. Scaphiocrinus whitei. Hall, Desc. New Spec. Crin., p. 7. Burlington L. S.

1861. Scaphiocrinus Whitei. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 306. Burlington L. S.: Burlington, Iowa.

## Poteriocrinus (species undetermined).

1897. Poteriocrinus sp. undet. Smith, Proc. Am. Phil. Soc., vol. 35, p. 26. Upper Coal Measures: Poteau Mountain, Indian Territory.

# PRESTWICHIA Woodward, 1867.

#### Prestwichia colletti White.

1884. Euproops Colletti. White, 13th Rep. Geol. Surv. Ind., p. 172, pl. 39, fig. 2.
Coal Measures: Durkee's Ferry. Vigo County. Indiana.

## Prestwichia danæ Meek and Worthen.

1865 Bellinurus Danæ. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 44.
Coal Measures: Morris, Illinois.

1866. Bellinurus Danæ. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 395, pl. 32, figs. 2, 2a.

Lower Coal Measures: Morris, Grundy County, Illinois.

1867. Prestwichia Danæ. Meek, Am. Jour. Sci. (2), vol. 43, p. 257.

1867. Euproops Danæ. Meek, Am. Jour. Sci. (2), vol. 43, p. 394.

1868. Euproops Danæ. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 547, fig. A. Coal Measures: Mazon Creek, Grundy County, Illinois.

1884. Euproops Danæ. White, 13th Rep. Geol. Surv. Ind., p. 170, pl. 39, fig. 1. Coal Measures: Mazon Creek, Grundy County, Illinois.

1886. Prestwichia danæ. Packard, Mem. Nat. Acad. Sci., vol. 3, pt. 2, p. 146, pl. 5, figs. 3, 3a; pl. 6, figs. 1, 1a, 2, 2a. Carboniferous: Mazon Creek, Illinois.

## Prestwichia longispina Packard.

1885. Euproops longispina. Packard, Am. Nat., vol. 19, p. 292. Carboniferous: Wilkesbarre and Pittston, Pennsylvania.

1886. Prestwichia longispina. Packard, Mem. Nat. Acad. Sci., vol. 3, pt. 2, p. 147, pl. 5, fig. 4; pl. 6, fig. 3.

Carboniferous: Pittston and Wilkesbarre, Pennsylvania.

#### Prestwichia (species undetermined).

1897. Prestwichia? Smith, Proc. Am. Phil. Soc., vol. 35, p. 63. Lower Coal Measures: White County, Arkansas.

# PRIMITIA Jones, 1865.

# Primitia cestriensis Ulrich.

1891. Primitia cestriensis. Ulrich, Jour Cinn. Soc. Nat. Hist., vol. 13, p. 201. Chester Group: Chester, Illinois.

## Primitia cestriensis var. caldwellensis Ulrich.

1891. Primitia cestriensis var. caldwellensis. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 202, pl. 14, figs. 7a-c.

Chester Group: Caldwell County, Kentucky.

## Primitia granimarginata Ulrich.

1891. Primitia granimarginata. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 201, pl. 12, figs, 8a, b.

Chester Group: Near Grayson Springs Station, Kentucky.

# Primitia simulans Ulrich.

1891. Primitia simulans. Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 201. Chester Group: Chester, Illinois.

#### Primitia subsequata Ulrich.

1891. Primitia subæquata. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 202, pl. 14, figs. 8a-c.

Chester Group: Claxton, Caldwell County, Kentucky.

## PRISMOPORA Hall, 1881.

#### Prismopora minima Ulrich.

1890. Priemopora minima. Ulrich, Geol. Surv. Ill., vol. 8, p. 506, pl. 78, figs. 1-1c. Lower Coal Measures: Sparta, Illinois.

#### Prismopora sereata Meek.

1875. Ptilodictya (Stictopora) sereata. Meek, Pal. Ohio, vol. 2, p. 327, pl. 20, fig. 4. Lower Coal Measures: Flint Ridge, Ohio.

1887. Prismopora sereata. Foerste, Bull. Den. Univ., vol. 2, p. 75, pl. 7, figs. 6a-c. Coal Measures: Bald Hill and Flint Ridge, Ohio.

#### Prismopora serrulata Ulrich.

1884. Prismopora serrulata. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 7, p. 41, pl. 2, figs. 2-2f.

Kaskaskia Group: Tateville and Grayson Springs, Kentucky.

#### Prismopora triangulata White.

1878. Ptilodictia triangulata. White, Proc. Acad. Nat. Sci. Phil., p. 35. Coal Measures: Danville, Illinois.

1879. Ptilodictia triangulata. White, Bull. U. S. Geol. and Geog. Surv. Terr., vol. 7,

Carboniferous: Yampa Plateau, Northwestern Colorado.

1880. Ptilodictia triangulata. White, Cont. to Inv. Pal., No. 6, p. 131, pl. 33, figs. 3a-e.

Coal Measures: Danville, Illinois; Yampa Plateau, Northwestern Colorado; and region southward from Yellowstone National Park.

1881. Ptilodictia triangulata. White, U. S. Geog. Surv. W. 100 Merid., vol. 3, Supp., Appendix, p. xxiv, pl. 4, figs. 2a-e.

Carboniferous: Cebolla Creek and Coyote Creek, New Mexico.

# Prismopora trifolia Rominger.

1866. Fistulipora trifolia. Rominger, Proc. Acad. Nat. Sci. Phil., p. 122. Keokuk L. S.: Lagrange, Missouri.

1890. Prismopora trifolia. Ulrich, Geol. Surv. Ill., vol. 8, p. 505, pl. 77, figs.

Keokuk Group: Keokuk, Iowa; Lagrange, Missouri; Warsaw, Illinois.

1894. Prismopora trifolia. Keyes, Mo. Geol. Surv., vol. 5, p. 18. Keokuk L. S.: Lagrange, Missouri; Keokuk, Iowa.

# PRODUCTELLA Hall, 1867.

# Productella arcuata. See Productus arcuatus.

#### Productella concentrica Hall.

- 1857. Productus concentricus. Hall, 10th Rep. N. Y. State Cab. Nat. Hist., p. 180. Chemung S. S.: Burlington, Iowa.
- 1858. Productus concentricus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 517, pl. 7, fig. 3. Chemung Group: Burlington, Iowa.
- 1862. Producta concentrica. Winchell, Proc. Acad. Nat. Sci. Phil., p. 411. Marshall Group: Pointe Aux Barques, Michigan.
- 1865. Producta concentrica. Winchell, Proc. Acad. Nat. Sci. Phil., p. 114.
  Marshall Group: Northern and Southern Michigan; Burlington, Iowa;
  Rockford, Indiana.
- 1869. Producta concentrica. Winchell, Safford's Geol. Tenn., p. 443.

  Shales just above Black Shale: Hickman and Maury counties, Tennessee.
- 1870. Producta concentrica. Winchell, Proc. Am. Phil. Soc., vol. 1, p. 249. Waverly Group: Tennessee; Sciotoville, Ohio.
- 1888. Productus concentricus. Herrick, Bull. Den. Univ., vol. 3, p. 33, pl. 6, fig. 16.
  Waverly Group: Licking County, Ohio.

# Productella newberryi. See Productus newberryi.

# Productella pyxidata Hall.

- 1858. Productus pyxidatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 498, pl. 3, figs. 8a-e. Hamilton Group: Hamburg, Illinois; Louisiana, Missouri.
- 1883. Productella pyzidata. Hall, Rep. N. Y. State Geol. for 1882, pl. (17) 48, fig. 34.

Devonian: Iowa.

1892. Productella pyxidata. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 21, figs. 20, 23.

Chouteau L. S.: Pike County, Missouri.

- 1892. Productella pyzidata. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 17, fig. 34; pl. 17A, fig. 14.
  Chouteau L. S.: Pike County, Missouri.
- 1894. Productella pyxidata. Keyes, Mo. Geol. Surv., vol. 5, p. 52, pl. 38, figs, 4a-d. Kinderhook Group: Louisiana, Hannibal, and Clarksville, Missouri.

#### Productella shumardiana Hall.

1858. Productus shumardianus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 499, pl. 3, fig. 9; pl. 7, fig. 1.

Hamilton Group: Clarksville, Missouri.

Chemung Group: Burlington, Iowa.

- 1867. Productella shumardiana. Hall, Pal. N. Y., vol. 4, p. 157, pl. 23, figs. 6-8. Corniferous L. S.: Williamsville, New York; Ohio; Illinois. Hamilton Group: Lake Erie above Buffalo, Pratt's Falls, and Moscow, New York; Hamburg, Illinois; Louisiana, Missouri; Burlington, Iowa.
- 1883. Productella Shumardiana. ·Hall, Rep. N. Y. State Geol. for 1882, pl. (17) 48, fig. 7.

Sandstone: Burlington, Iowa.

- 1888. Productus (Productella) shumardianus. Herrick, Bull. Den. Univ., vol. 3, p. 32, pl. 7, fig. 18; pl. 12, figs, 6, 43.
  Waverly Group: Licking County, Ohio.
- 1892. Productella Shumardiana. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 17, fig. 7.

Yellow Sandstone: Burlington, Iowa.

Bull. 153----31

# Productella speciosa Hall.

- 1857. Productus speciosus. Hal. 10th Rep. N. Y. State Cab. Nat. Hist., p. 176. Chemung Group: Chautauqua County, New York.
- 1863. Producta speciosa. Winchell, Proc. Acad. Nat. Sci. Phil., p. 4. Yellow S. S.: Burlington, Iowa.
- 1867. Productella speciosa. Hall, Pal. N. Y., vol. 4, p. 175, pl. 25, figs. 1-11. Chemung Group: New York.
- 1888. Productus (Productella) speciosus? Herrick, Bull. Den. Univ., vol. 3, p. 34. Waverly Group: Licking County, Ohio.

## Productella spinulicosta Hall.

- 1857. Productus spinulicosta. Hall, 10th Rep. N. Y. State Cab. Nat. Hist , p. 173. Hamilton Group: Cayuga Lake, New York.
- 1867. Productella spinulicosta. Hall, Pal. N. Y., vol. 4, p. 160, pl. 23, figs. 25-34. Hamilton Group: Shores of Cayuga, Seneca, and Erie lakes, New York.
- 1883. Productella spinulicosta? Hall, Rep. N. Y. State Geol. for 1882, pl. (17) 48, fig. 6.

Waverly Group: Burlington, Iowa.

1892. Productella spinulicosta. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 17, figs, 3-6.

Corniferous L. S.: Louisville, Kentucky.

Marcellus Shale: Western New York.

Yellow Sandstone: Burlington, Iowa.

## Productella subaculeata Murchison.

- 1867. Productella subaculeata. Hall, Pal. N. Y., vol. 4, p. 154, pl. 23, figs. 4, 5. Corniferous L. S.: Falls of the Ohio.
- 1884. Productus subaculeatus. Walcott, Pal. Eureka Dist., p. 214, pl. 7, fig. 2. Lower Carboniferous L. S.: Eureka District, Nevada.

#### Productella (species undetermined).

- 1883. Productella, spf Hall, Rep. N. Y. State Geol. for 1882, pl. (18) 49, fig. 4. Waverly S. S.: Newark, Ohio.
- 1888. Productella f Herrick, Bull. Den. Univ., vol. 3, fig. 24.
  Waverly Group: Licking County, Ohio.

# PRODUCTUS Sowerby, 1812.

# Productus sequicostatus Shumard.

- 1855. Productus aequicostatus. Shumard, Geol. Rep. Mo., p. 201, pl. C, fig. 10. Upper Coal Measures: On Missouri River, at Iowa Point, Bondtown, Dallas, mouth of Platte River, and Weston.
- 1855. Productus aequicostatus. Schiel, Pac. R. R. Rep., vol. 2, p. 108, pl. 2, fig. 45. Carboniferous L. S.: Willow Creek.
- 1892. Productus æquicostatus. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 22, figs. 11, 12.

Coal Measures: Nebraska.

1892. Productus aequicostatus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 17A, figs. 22, 23.

Coal Measures: Nebraska.

#### Productus alternatus Norwood and Pratten.

- 1855. Productus alternatus. Norwood and Pratten, Jour. Phil. Acad. Nat. Sci. (2), vol. 3, p. 20, pl. 2, figs. 1a-c.
  Mountain L. S.: Rocky Run, Hancock County, Illinois.
- 1883. Productus alternatus. Hall, Rep. N. Y. State Geol. for 1882, pl. (18) 49, fig. 14. Keokuk L. S.
- 1892. Productus alternatus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 18, fig. 14.

Keokuk Group: Illinois.

#### Productus altonensis Norwood and Pratten.

1855. Productus altonensis. Norwood and Pratten, Jour. Phil. Acad. Nat. Sci. (2), vol. 3, p. 7, pl 1, figs. 1a-c.

Mountain L. S.: Alton, Illinois.

1894. Productus altonensis. Keyes, Mo. Geol. Surv., vol. 5, p. 43. St. Louis L. S.: St. Louis, Missouri.

# Productus americanus Swallow.

1863. Productus Americanus. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 91. Upper Coal Measures: Harrison County, Missouri.

1894. Productus americanus. Keyes, Mo. Geol. Surv., vol. 5, p. 44. Upper Coal Measures: Harrison County, Missouri.

#### Productus arcuatus Hall.

1858. Productus arcuatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 518, pl. 7, figs. 4a, b. Chemung Group: Burlington, Iowa.

1870. Producta arcuata. Winchell, Proc. Am. Phil, Soc., vol. 11, p. 250. Waverly Group: Rockville and Granville, Ohio.

1883. Productella arcuata. Hall, Rep. N. Y. State Geol, for 1882, pl. (17) 48. figs. 31, 32.

Sandstone: Burlington, Iowa.

1888. Productus arcuatus. Herrick, Bull. Den. Univ., vol. 3. p. 31, pl. 3, fig. 18. Waverly Group: Licking County, Ohio.

1892. Productella arcuata. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 17, figs. 31, 32.

Yellow S. S.: Burlington, Iowa.

1894. Productus arcuatus. Keyes, Mo. Geol. Surv., vol. 5, p. 40. Kinderhook Group: Hannibal, Missouri.

Productus asperus. See Productus nebraskensis.

## Productus auriculatus Swallow.

1863. Productus auriculatus. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 92.

1892. Productus (f auriculatus, Swallow). Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 22, fig. 6.

Coal Measures: Near Kansas City, Missouri.

1892. Productus († auriculatus Swallow). Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 17A, fig. 24.

Coal Measures: Near Kansas City, Missouri.

#### Productus biseriatus Hall.

1856. Productus biseriatus. Hall, Trans. Albany Inst., vol. 4, p. 12. St. Louis L. S.: Alton, Illinois; Bloomington, Indiana.

1882. Productus biscriatus. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 46, pl. 6, figs. 8-12.

St. Louis Group: Spergen Hill, Paynter's Hill, and Bloomington, Indiana; Alton, Illinois.

1883. Productus biscriatus. Hall, 12th Rep. Geol. Surv. Ind., p. 325, pl. 29,

St. Louis Group: Alton, Illinois; Spergen Hill, Paynter's Hill, and Bloomington, Indiana.

1894. Productus biseriatus. Keyes, Mo. Geol. Surv., vol. 5, p. 43. Keokuk L. S.: St. Francisville, Missouri; Keokuk, Iowa.

#### Productus blairi Miller.

1891. Productus blairi . Miller, Adv. Sheets 17th Rep. Geol. Surv. Ind., p. 79, pl. 13, figs. 16, 17.

Chonteau L. S.: Sedalia, Missouri.

1892. Productus blairi. Miller, 17th Rep. Geol. Surv. Ind., p. 689, pl. 13, figs. 16, 17.

Chouteau L. S.: Sedalia, Missouri.

#### Productus boliviensis D'Orbigny.

1847. Productus boliviensis. De Koninck, Monog. du Gen. Prod. et Chon., p. 77, pl. 8, figs. 2 a-c.

Carboniferous L. S.: Bolivia, South America.

1855. Productus Boliviensis. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 11.

Coal Measures: 12 miles northwest of Richmond, Missouri.

#### Productus boonensis Swallow.

1858. Productus Boonensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 217. Coal Measures: Near mouth of Platte River, Nebraska; Kansas.

#### Productus boonensis var. elevata Swallow.

1858. Productus Boonensis var. elevata. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 217.

Coal Measures: Kansas and Nebraska.

#### Productus buchianus de Koninck.

1855. Productus Buckianus. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 20.

Coal Measures: Big Creek, Posey County, Indiana.

# Productus burlingtonensis Hall.

1858. Productus flemingi var. burlingtonensis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 598, pl. 12, figs. 3 a-g.
Burlington L. S.: Burlington, Iowa; Quincy, Illinois.

1877. Productus Flemingi var. Burlingtonensis. Hall and Whitfield, U. S. Geol. Exped., 40 Par., vol. 4, p. 285, pl. 5, figs. 9-12.
Lower Carboniferous L. S.: North of Snowstorm Hill, Dry Canyon,

Oquirrh Mountains, Utah.

1883. Productus Flemingi var. Burlingtonensis. Hall, Rep. N. Y. State Geol. for 1882, pl. (18) 49, figs. 6-8.

Burlington L. S.: Burlington, Iowa.

1888. Productus flemingi var. burlingtonensis. Herrick, Bull. Den. Univ., vol. 3, p. 32, pl. 3, figs. 20 (22†).
Waverly Group: Licking County, Ohio.

1892. Productus Flemingi var. Burlingtonensis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 18, figs. 6-8.

Burlington L. S.: Burlington, Iowa.

1894. Productus burlingtonensis. Keyes, Mo. Geol. Surv., vol. 5, p. 41.

Burlington L. S.: Hannibal, Helton, Louisiana, Springfield, and Ash
Grove. Missouri.

Keokuk L. S.: St. Francisville and Boonville, Missouri.

# Productus calhounanus Swallow.

1858. Productus Calhounianus. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 181.

Lower Permian: Kansas.

1858. Productus Calhounianus. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 215. Upper Coal Measures and Permian: Kansas.

1859. Productus Calhounianus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 389.

White and Dark Permian L. S.: Guadalupe Mountains.

1859. Productus Calhounianus. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 26.

Upper Coal Measures: Fort Riley and Cottonwood Creek, Kansas.

1861. Productus Calhounianus. Newberry, Ives's Colo. Expl. Exped., p. 123. Carboniferons: Kansas.

Also see Productus cora.

## Productus calhounanus var. kansasensis Swallow.

1858. Productus Calhonnianus var. Kansasensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 216.

Upper Coal Measures and Permian: Kansas.

Mountain L. S. and Coal Measures: Missouri.

Productus cancrini. See Productus pertenuis.

## Productus carbonarius De Koninck.

1855. Productus carbonarius. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 11.

Mountain L. S.: Fountain Bluff, Illinois.

#### Productus cestriensis Worthen.

1855. Productus elegans. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 3, pl. 1, figs. 7a-c. (Not P. elegans McCoy.)
Mountain L. S.: Chester and Kaskaskia, Illinois; Missouri, near Hat

1860. Productus Cestriensis. Worthen, Trans. St. Louis Acad. Sci., vol. 1, p. 570. Chester L. S.: Chester, Illinois.

1877. Productus elegans. Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 268, pl. 5, figs. 3, 4.
Lower Carboniferous L. S.: North of Snowstorm Hill, Dry Canyon Oquirrh Mountains, Utah.

1891. Productus elegans. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 581, pl. 13, figs. 15, 16.

Maxville L. S.: Ohio.

1894. Productus cestriensis. Keyes, Mo. Geol. Surv., vol. 5, p. 44. Kaskaskia L. S.: Ste. Mary, Missouri.

1895. Productus elegans. Whitfield, Geol. Surv. Ohio, vol. 7, p. 669, pl. 9, figs. 15, 16.
Maxville L. S.: Ohio.

1897. Productus cestriensis. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 256, pl. 16, figs. 7-9.
Batesville S. S.: Batesville, Arkansas.

#### Productus clavus Norwood and Pratten.

1855. Productus clarus. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 10, pl. 1, figs. 4a-c.
Coal Measures: Grayeville, Illinois.

#### Productus compressus Say.

1823. Productus compressus. Say, Long's Exped. to Rocky Mts., vol. 1, p. 150 (foot note).

Missouri River, 5 miles below Council Bluffs.

1897. Productus compressus. Harris, Bull. Am. Pal., vol. 1, p. 384 (114).

## Productus concentricus. See Productella concentrica.

## Productus confragosus Conrad.

1835. Productus confragosus. Conrad, Trans. Geol. Soc. Penn., vol. 1, pt. 2, p. 267, pl. 12, fig. 5.

# Productus cooperensis Swallow.

- 1860. Productus Copoerensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 640.

  Chouteau L. S.: Cooper County, Missouri.
- 1865. Producta Cooperensis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 115. Bed No. 1: Burlington, Iowa.
- 1870. Producta Cooperensis? Winchell, Proc. Am. Phil. Soc., vol.11, p. 249. Waverly Group: Sciotoville, Ohio.

# Productus cora D'Orbigny.

- 1847. Producta cora. De Koninck, Monog. du Gen. Prod. et Chon., p. 50, pl. 4, figs. 4a, b; pl. 5, figs. 2a-d.
  - Carboniferous: Guernsey County, Flint Ridge, and Zanesville, Ohio; between New Harmony and Mount Vernon, Indiana; Leavenworth, Indiana; Windsor, Nova Scotia; Bolivia, etc., South America.
- 1848. Productus Martini. Christy, Letters on Geol., pl. 5, figs. 6, 8, 9. Pinckneyville, Illinois.
- 1852. Productus semireticulatus. Hall, Stansb. Exped. Gt. Salt Lake, p. 411, pl. 3, figs. 3, 5a, b.
  - Carboniferous: Near Fort Laramie; and Flat Rock Point and other places in the neighborhood of Great Salt Lake, Utah.
  - 1852. Productus cora. Owen, Geol. Rep. Wis., Iowa, and Minn., Tab. 5, fig. 1. Carboniferous: Missouri River, below mouth of Little Platte River.
  - 1852. Productus cora. Roemer, Kreid. von Texas, p. 90. Carboniferous: San Saba Valley, Texas.
  - 1854. Productus cora. Marcy's Expl. Red River of Louis., p. 176. Carboniferous: Washington and Crawford counties, Arkansas.
  - 1855. Productus cora. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 6.
    Mountain L. S.: Chester. Rosiclare. and Warsaw. Illinois: near Rich.
  - Mountain L. S.: Chester, Rosiclare, and Warsaw, Illinois; near Richmond, Missouri; Carrsville, Kentucky.
     1855. Productus Prattenianus. Norwood, Jour. Acad. Nat. Sci. Phil. (2), vol. 3,
  - p. 17, pl. 1, figs. 10a-d.

    Coal Measures: Crossing of Big Nemahaw River, about 85 miles northwest of St. Joseph, Missouri.
  - 1855. Productus Cora. Salter, Belcher's "Last of the Arctic Voyages," p. 387,
     pl. 36, fig. 12.
     Carboniferous: Top of Exmouth Island.
  - 1858. Productus cora. Marcou, Geol. N. A., p. 45, pl. 6, figs. 4, 4a.
    Mountain L. S.: Tigeras Canyon of San Antonio; Pecos Village; summit of Sierra de Sandia, New Mexico.
  - 1859. Productus Prattenianus. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 26.
    - Coal Measures: Indian Creek and Leavenworth, Kansas.
  - 1863. Productus Cora. Davidson, Quart. Jour. Geol. Soc. Lond., vol. 19, p. 174, pl. 9, figs. 22, 23.
    - Lower Carboniferous L. S.: Windsor, Horton Bluff, Shubenacadie, Gays River, Cape Breton, Pugwash, eastward of Cumberland, Lennox Passage, M'Kenzies Mill, at eastern extremity of Wallace Harbor, etc., Nova Scotia.
  - 1866. Productus Flemingi. Geinitz, Carb. und Dyas. in Nebr., p. 52, tab. 4, figs. 1-4. Bellevue, Plattsmouth, and Nebraska City, Nebraska.
  - 1866. Productus Koninckianus? Geinitz, Carb. und Dyas. in Nebr., p. 53, tab. 4, fig. 4.
    Nebraska City, Nebraska.
  - 1868. Productus cora. Dawson, Acad. Geol., p. 297, figs. 98 a, b.
    Carboniferous L. S.: Windsor, Horton Bluff, Shubenacadis, Gayo filver,
    Minudie, Cape Breton, Pugwash, east coast of Cumberland, Leaves
  - Passage, M'Kenzies Mill, Wallace Harbor, etc., Nova 5, 1872. Productus Prattenianus. Meek, U. S. Geol. Surv. Nebr., 5a-c; pl. 5, fig. 13; pl. 8, figs. 10a, b.
    - Upper Coal Measures: Nebraska City, Bennett mouth, Bellevue, and Omaha, Nebraska;
    - Lower Coal Measures: Illinois.

# Productus cora D'Orbigny—Continued.

- 1874. Productus Prattenianus (= † P. laevicostus). White, Prelim. Rep. Inv. Foss., p. 17.
  - Subcarboniferous: Below Ophir City, Utah.
- 1874. Productus Cora (†). Derby, Bull. Cornell Univ. (Sci.), vol. 1, No. 2, p. 49, pl. 2, fig. 17; pl. 6, fig. 17.
- Coal Measures: Itaituba and Barreirinha, Brazil.

  1876. Productus Prattenianus. White, Powell's Rep. Geol. Uinta Mts., p. 90.
  - Lower Aubrey Group: Confluence of Grand and Green rivers, Utah.
- 1877. Productus Prattenianus. Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 72, pl. 7, fig. 7.
  Carboniferous: Fossil Hill. White Pine District: Railroad Canyon. Dia-
- mond Mountains, Nevada.

  1877. Productus Prattenianus. White, U. S. Geog. Surv. W. 100 Merid., vol. 4,
  - p. 113, pl. 7, figs. 1a-c.

    Carboniferous: Near Sante Fe and Zandia Mountains, New Mexico; Piloncillo range near Gavilan Peak, and at the confluence of White Mountain and Black rivers, Arizona; Egan range, 35 miles south of Egan Pass; Fossil Hill, White Pine County; Robert's Creek range, Lander County, and top of Grass Mountain, Ely range, 35 miles north of Pioche, Nevada; near Beckwith Spring, Cedar range; near top of Mount Nebo, and west face of Oquirrh range, Utah.
  - Subcarboniferous: Mountain Spring, Lincoln County, Nevada, and below Ophir City, Utah.
- 1884. Productus Cora. White, 13th Rep. Geol. Surv. Ind., p. 126, pl. 26, figs. 1-3.
  Coal Measures: Fountain, Vermilion, Parke, Montgomery, Clay, Owen,
  Pike, Dubois, and Warrick counties, Indiana.
- 1886. *Productus Cora*. Heilprin, 2d Geol. Surv. Penn., Ann. Rep. 1885, p. 452; p. 440, figs. 1, 1a.
  - Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.
- 1886. Productus Cora. Heilprin, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 268, figs. 1, 1a.
- Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania. 1887. Productus Cora. Herrick, Bull. Den. Univ., vol. 2, p. 47, pl. 2, figs. 26.
- Coal Measures: Flint Ridge, Ohio.
- 1888. Productus cora. Keyes, Proc. Acad. Nat. Sci. Phil., p. 227. Lower Coal Measures: Des Moines, Iowa.
- 1892. Productus spf compare Prattenanus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 18, fig. 4.
  Waverly S. S.: Newark, Ohio.
- 1894. Productus cora. Keyes, Mo. Geol. Surv., vol. 5, p. 47, pl. 37, figs. 2a-c. Coal Measures: Calhoun and Kansas City, Missouri.
- 1897. Productus cora. Smith, Proc. Am. Phil. Soc., vol. 35, p. 28.
  Upper Coal Measures: Poteau Mountains, Indian Territory.
  Archimedes L. S.: Independence County, Arkansas.
  Marshall Shale: Independence and Stone counties, Arkansas.
  Fayetteville Shale: Independence County, Arkansas.

## Productus cora var. mogoyoni Marcou.

- 1858. Productus cora var. mogoyoni. Marcou, Geol. N. A., p. 45, pl. 6, fig. 5.

  Mountain L. S.: Near the extinct volcano of San Francisco, New Mexico.
- Productus coræformis Swallow.
  - 1863. Productus coræformis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 94. Archimedes L. S.: Cooper County, Missouri.

# Productus costatoides Swallow.

- 1858. Productus costatoides. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 217.
  Upper Coal Measures: Kansas.
- 1861. Productus costatoides. Newberry, Ives's Colo. Expl. Exped., p. 123.
  Upper Carboniferous (Cherty L. S.): Banks of Colorado River.

#### Productus costatus Sowerby.

- 1847. Productus costatus. De Koninck, Monog. du Gen. Prod. et Chon., p. 92, pl. 8, figs. 5a-c; pl. 10, figs. 5a-g; pl. 18, figs. 3a, b. Carboniferous L. S.: St. Louis, Missouri.
- 1848. Productus. Christy, Letters on Geol., pl. 5, fig. 7. Coal: Eden, Illinois.
- 1852. Productus costatus? Hall, Stansb. Exped. Gt. Salt Lake, p. 411, pl. 3, fig. 2. Carboniferous: Missouri River.
- 1854. Productus costatus. Shumard, Marcy's Expl. Red River of Louis., p. 176, pl. 1, fig. 2.
  Carboniferous: Washington County, Arkansas.
- 1855. Productus costatus. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 11.
  - Coal Measures: Caseyville and Belleville, Illinois; Charboniere, Missouri.
- 1855. Productus Portlockianus. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 15, pl. 1, figs. 9 a-c.
- Coal Measures: Grayville, White County, Illinois; Charboniere, Missouri. 1858. Productus costatus. Marcou, Geol. N. A., p. 46, pl. 5, fig. 5.

  Mountain L. S.: Cedar Creek, Sierra de Mogoyoni; Sierra of Arizona; sources of Colorado Chiquito.
- 1858. Productus costatus, var. Hall, Geol. Iowa, vol. 1, pt. 2, p. 712, pl. 28, figs. 3a, b, 4a-c.
  - Coal Measures: Ohio; Illinois; Missouri; Iowa.
- 1861. Productus costatus. Newberry, Ives's Colo. Expl. Exped., p. 123. Upper Carboniferous (Cherty L. S.): Banks of Colorado River. Coal Measures: Nebraska.
- 1872. Productus costatus?? Meek, U. S. Geol. Surv. Nebr., p. 159, pl. 6, figs. 6a, b. Upper Coal Measures: Nebraska City, 2; miles west of Nebraska City, Wyoming, Bennett's Mill, Rock Bluff, Cedar Bluff, Plattsmouth, Bellevue, and Omaha, Nebraska.
  - Coal Measures: Illinois; Iowa; Missouri; Pennsylvania.
- 1876. Productus costatus? White, Powell's Rep. Geol. Uinta Mts., p. 89. Lower Aubrey Group: Near Echo Park, Utah.
- 1876. Productur costatus, var. White, Powell's Rep. Geol. Uinta Mts., p. 89.

  Lower Aubrey Group: Near Echo Park, Utah.
- 1877. Productus costatus?? Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 69, pl. 7, figs. 4, 4b.
  - Carboniferous: Railroad Canyon, Diamond Mountains; Fossil Hill, White Pine Mountains, and Moleen Peak, Nevada.
- 1877. Productus costatus. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, pt. 1, p. 109, pl. 8, figs. 2a-d.
  - Carboniferous: Camp Cottonwood, Old Mormon road, Lincoln County; top of Grass Mountains, Ely range, 35 miles north of Pioche; and at Silver Peak, Nevada; head of Partridge Creek, Yavapaı County; Salt River; and head of Big Dry Fork, Arizona; Kanab Canyon, Arizona; Rock Canyon, Wahsatch range, near Provo; Lake range, Fairfield road, and first camp south of Saint George, Utah; near Bear Spring; Camp Wingate, and in the Zuni Mountains, between Camp Wingate and Nutria Spring, New Mexico.
- 1878. Productus costatus. Etheridge, Quart. Jour. Geol. Soc. Lond., vol. 34, p. 631. Carboniferous: Feilden Isthmus, latitude 82° 43°.

# Productus costatus Sowerby—Continued.

- 1881. Productus costatus. White, 2d Ann. Rep. Dep. Stat. and Geol. Ind., p. 516, pl. 8, figs. 7, 8.
  - Coal Measures: Silver Mine; Vermilion County, Indiana.
- 1883. Productus costatus. Hall, Rep. N. Y. State Geol. for 1882, pl. (19) 50, figs. 8-13. Coal Measures: Iowa.
- 1884. Productus costatus. White, 13th Rep. Geol. Surv. Ind., p. 124, pl. 24, figs. 4-6; pl. 25, figs. 3-5.
  Coal Measures: Indiana.
- 1892. Productus costatus. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 22, fig. 1.
  - Coal Measures: Winterset, Iowa.
- 1892. Productus costatus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 19, figs. 8-13.
  Coal Measures: Winterset. Iowa.
- 1894. Productus costatus. Keyes, Mo. Geol. Surv., vol. 5, p. 51, pl. 36, figs. 1a-c. Upper Coal Measures: Kansas City, Missouri.

## Productus curtirostris Winchell.

1865. Producta curtirostra. Winchell, Proc. Acad. Nat. Sci. Phil., p. 114.
Yellow Sandstone: Burlington, Iowa.

## Productus delawari Marcou.

1858. Productus delawerii. Marcou, Geol. N. A., p. 45, pl. 5, fig. 3.
Mountain L. S.: Western foot of Delaware Mountain, Texas.

#### Productus depressus Swallow.

1863. Productus depressus. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 93. Keokuk L. S.: Fenton, St. Louis County, Missouri.

#### Productus dolorosus Winchell.

1865. Producta dolorosa. Winchell, Proc. Acad. Nat. Sci. Phil., p. 114.
Marshall Group: Weymouth, Medina County, Ohio, 60 feet below conglomerate.

## Productus duplicostatus Winchell.

- 1865. Producta duplicosta. Winchell, Proc. Acad. Nat. Sci. Phil., p. 113. Marshall Group: Battle Creek, Michigan; Licking County, Ohio.
- 1888. Productus duplicostatus. Herrick, Bull. Den. Univ., vol. 4, p. 21, pl. 11, figs. 26, 29.

Waverly Group: Knox and Licking counties, Ohio.

# Productus elegans. See Productus cestriensis.

#### Productus fasciculatus McChesney.

1860. Productus fasciculatus. McChesney, Desc. New Pal. Foss., p. 38.
Kaskaskia L. S.: Fountain Bluff, Kaskaskia, and Chester, Illinois; Leaven worth, Indiana.

#### Productus fentonensis Swallow.

1863. Productus Fentonensis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 93. Fenton, St. Louis County, Missouri.

#### Productus fimbriatus Sowerby.

1855. Productus fimbriatus. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 19.

Mountain L. S.: Near Alton, Illinois.

Coal Measures: Big Creek, Posey County, Indiana.

1878. Productus fimbriatus. Etheridge, Quart. Jour. Geol. Soc. Lond., vol. 34, p. 630.

Carboniferous: Feilden Isthmus, latitude 82º 43'.

Productus flemingi. See Productus longispinus and Productus cora.

# Productus flemingi var. burlingtonensis. See Productus burlingtonensis. Productus flexistria McCov.

1855. Productus flexistria. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 6.

Mountain L. S.: Chester, Kaskaskia, and Fountain Bluff, Illinois; near Stephenport, Kentucky.

## Productus giganteus Martin.

1880. Productus giganteus. White, Cont. to Pal. No. 6, p. 132, pl. 36, figs. 1a-c. Carboniferous: Valley of the McCloud River, Shasta County, California.

1881. Productus giganteus. White, Proc. U. S. Nat. Mus., vol. 3, p. 46.
Carboniferous: Valley of McCloud River, Shasta County, California.

## Productus gracilis Winchell.

1865. Producta gracilis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 112.
Marshall Group: Valley Forge, 1½ miles below Cuyahoga Falls, Ohio.

1870. Producta gracilis? Winchell, Proc. Am. Phil. Soc., vol. 11, p. 250. Waverly Group: Sciotoville, Ohio.

1888. Productus gracilis. Herrick, Bull. Den. Univ., vol. 3, p. 34, pl. 7, fig. 20. Waverly Group: Licking County, Ohio.

# Productus gradatus Swallow.

1863. Productus gradatus. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 93. Keokuk, L. S.: Keokuk, Iowa; Lewis and St. Louis counties, Missouri.

# Productus granulosus Phillips.

1855. Productus Granulosus. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 21.

Mountain L. S.: Nauvoo, Illinois; Carrsville, Kentucky.

#### Productus hepar Morton.

1836. Productus hepar. Morton, Am. Jour. Sci. (1), vol. 29, p. 149, pl. 26, fig. 39. Coal Measures: Ohio Valley.

## Productus hildrethianus Norwood and Pratten.

1855. Productus Hildrethianus. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 18, pl. 1, figs. 11a-c. Coal Measures: Charboniere, Missouri.

## Productus horridus. See Productus longispinus.

## Productus incurvus Say.

1823. Productus incurrus. Say, Long's Exped. to Rocky Mts., vol. 1, p. 106 (footnote).

From Fort Osage.

1897. Productus incurvus. Harris, Bull. Am. Pal., vol. 1, p. 379 (109).

## Productus indianensis Hall.

1856. Productus Indianensis. Hall, Trans. Albany Inst., vol. 4, p. 13.
St. Louis L. S.: Spergen Hill, Indiana.

1882. Productus Indianensis. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 47, pl. 6, figs. 6, 7.

St. Louis Group: Spergen Hill, Indiana.

1883. Productus Indianensis. Hall, 12th Rep. Geol. Surv. Ind., p. 326, pl. 29, figs. 6, 7.

St. Louis Group: Spergen Hill, Indiana.

# Productus inflatus McChesney.

1860. Productus inflatus. McChesney, Desc. New Pal. Foss., p. 40. Carboniferous L. S.: Leavenworth, Indiana.

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# Productus inflatus McChesney-Continued.

1865. Productus inflatus. McChesney, Ill. New Spec. Foss., pl. 6, figs. 1a-c.

1868. Productus inflatus. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 27, pl. 6, figs. 1a-c.

Carboniferous L. S.: Leavenworth, Indiana.

#### Productus ivesi Newberry.

1861. Productus Ivesi. Newberry, Ives's Colo. Expl. Exped., p. 122, pl. 2, figs. 1-8. Middle Carboniferous L. S.: Banks of Colorado River, near mouth of Diamond River.

1877. Productus Iresif Meek, U. S. Geol. Expl., 40 Par., vol. 4, p. 67, pl.7, figs. 6-6b.
Carboniferous: Fossil Hill, White Pine Mountains; Railroad Canyon,
Diamond Mountains; west of San Francisco Mountain, etc., Nevada.

#### Productus koninckianus. See Productus cora.

Productus lachrymosus var. stigmaria Herrick. See Productus raricostatus.

#### Productus levicostus White.

\*1860. Productus lævicostus. White, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 230. Burlington L. S.: Burlington, Iowa.

1877. Productus læricostus? Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 266, pl. 5, figs. 7, 8.

Lower Carboniferous L. S.: North of Snowstorm Hill, Dry Canyon, Oquirrh Mountains, Utah.

1894. Productus lævicostus. Keyes, Mo. Geol. Surv., vol. 5, p. 41, pl. 38, fig. 1. Kinderhook Group: Louisiana, Missouri. Burlington Group: Louisiana, Missouri.

## Productus lasallensis Worthen.

1873. Productus Lasallensis. Worthen, Geol. Surv. Ill., vol. 5, p. 569, pl. 25, fig. 9. Upper Coal Measures: Lasalle, Illinois.

1892. Productus (Marginifera) Lasallensis. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 22, fig. 15.

Upper Carboniferous: Lasalle, Illinois.

1892. Productus (Marginifera) Lasallensis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 17A, fig. 13.
Upper Carboniferous: Lasalle, Illinois.

#### Productus latissimus Sowerby.

1823. Productus latissimus. Sowerby, Min. Conch., vol. 4, p. 32, tab. 330.

1876. Productus Latissimus. Meek, Bull. U. S. G. and G. Surv. Terr., vol 2, p. 354, pl. 1, fig. 1.

Carboniferous: Katlahwoke Creek, Rocky Mountains.

# Productus leplayi de Verneuil.

1859. Productus Leplayi (?) Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 390. White Permian L. S.: Guadalupe Mountains.

# Productus leuchtenbergensis De Koninck.

1855. Productus Leuchtenbergensis. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 19.

Mountain L. S.: Mason's Landing, Jersey County, Illinois.

#### Productus lineolatus Say.

1823. Productus lineolatus. Say, Long's Exped. to Rocky Mts., vol. 1, p. 151 (footnote).

Missouri River, 5 miles below Council Bluffs.

1897. Productus lineolatus. Harris, Bull. Am. Pal., vol. 1, p. 384 (114).

## Productus longispinus Sowerby.

- 1847. Productus flemingii. De Koninck, Monog. du Gen. Prod. et Chon., p. 95, pl. 10, figs. 2a-l; fig. 3u. (Not P. flemingii Sowerby, 1812.)
  - Carboniferous: Louisville, Kentucky; Bagdad, Flint Ridge, Zanesville, and Guernsey, Ohio; Sparta, Illinois; Windsor, Nova Scotia; Bank of Missouri River; Bolivia, South America.
- 1852. Productus Flomingii. Owen, Geol. Rep. Wis., Iowa, and Minn., tab. 5, fig. 2. Carboniferous: Missouri River, near mouth of Keg Creek.
- 1852. Productus flemingii. Roemer, Kreid. von Texas, p. 89, taf. 11, figs. 8a, b. Carboniferous: San Saba Valley, Texas.
- 1855. Productus Flemingii. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 11.
  Mountain L. S.: Hardin County, Illinois; Leavenworth, Indiana; Burlington, Iowa.
- 1855. Productus eplendens. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 11, pl. 1, figs. 5a-d.
  Coal Measures: Galatia, Illinois; 6 miles west of Richmond, Missouri; near Big Creek, Posey County, Indiana.
- 1855. Productus splendens. Schiel, Pac. R. Rep., vol. 2, p. 108, pl. 1, fig. 3. Carboniferous L. S.: 6 miles west of Westport.
- 1858. Productus flomingii. Marcou, Geol. N. A., p. 47, pl. 6, fig. 7.
  Mountain L. S.: Tigeras in the canyon of San Antonio, and near the summit of Sierra de Sandia; Pecos Village; Ohio, Indiana, and Arkansas.
- 1859. Productus eplendens (†) Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 25. Upper Coal Measures: Manhattan and Fort Riley, Kansas.
- 1861. Productus splendens? Newberry, Ives's Colo. Expl. Exped., p. 124.

  Coal Measures L. S.: Santa Fe Road, 10 miles west of Burlingame, Kansas.
- 1866. Productus horridus. Geinitz, Carb. und Dyas in Nebr., p. 55, tab. 4, fig. 7. (Not P. horridus Sowerby, 1822.)
  Bennett's Mill, Nebraska City, Nebraska.
  - Bennett's Mill, Nebraska City, Nebraska.
- 1866. Productus Orbignyanus. Geinitz, Carb. und Dyas in Nebr., p. 56, tab. 4, figs. 8-11.
  Bellevue, Plattsmouth, and Nebraska City, Nebraska.
- 1877. Productus longispinus? Meek, U. S. Geol. Surv. Nebr., p. 161, pl. 6, fig. 7; pl. 8, figs. 6a-c.
  - Upper Coal Measures: Nebraska City, Wyoming; Bennett's Mill, Rock Bluff, Cedar Bluff, Plattsmouth, Bellevue, and Omaha, Nebraska.
  - Upper, Middle, and Lower Coal Measures: Iowa; Illinois; Kansas; Missouri.
- 1873. Productus Longispinus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 569, pl. 25, fig. 10.
  Upper and Lower Coal Measures: Illinois.
- 1876. Productus longispinus? White, Powell's Rep. Geol. Uinta Mts., p. 89.

  Lower Aubrey Group: Near Echo Park, and at confluence of Grand and Green rivers, Utah.
- 1877. Productus longispinus. Meek, U. S. Geol. Expl., 40 Par., vol. 4, p. 78, pl. 8, figs. 4, 4a.
  Carboniferous L. S.: Fossil Hill, White Pine District, Nevada.
- 1877. Productus longispinus. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 118, pl. 8, figs. 5a-d.
  - Carboniferous: East of Minersville and at Meadow Creek, south of Fillmore, Utah; Camp Cottonwood, old Mormon road, Lincoln County, Nevada; near Santa Fe, New Mexico.
- 1883. Productus longispinus. Hall, Rep. N. Y. State Geol. for 1882, pl. (19) 50, figs. 1-4.
  - Coal Measures: Winterset, Iowa; Lasalle, Illinois.

#### Productus longispinus Sowerby—Continued.

1884. Productus longispinus. White, 13th Rep. Geol. Surv. Ind., p. 127, pl. 24, figs. 10, 11.

Coal Measures: Fountain, Parke, Vermilion, Vigo, Sullivan, Knox, Pike, Warrick, Spencer, Posey, Gibson, and Vanderburg counties, Indiana.

 Productus longispinus. Herrick, Bull. Den. Univ., vol. 2, p. 48, pl. 2, figs. 25, 27, 28.

Coal Measures: Flint Ridge, Ohio.

1892. Productus (Marginifera) splendens. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 22, figs. 13, 14.

Upper Coal Measures: Winterset, Iowa.

Coal Measures: Lasalle, Illinois.

1892. Productus (Marginifera) splendens. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1. pl. 19, figs. 1-4.

Upper Coal Measures: Winterset, Iowa; Lasalle, Illinois.

1894. Productus longispinus. Keyes, Mo. Geol. Surv., vol. 5, p. 45, pl. 37, figs. 4a, b, Upper Coal Measures: Kansas City, Missouri.

1897. Productus eplendens. Smith, Proc. Am. Phil. Soc., vol. 35, p. 29.
Upper Coal Measures: Sebastian County, Arkansas, and Poteau Mountain, Indian Territory.

# Productus magnicostatus Swallow.

1860. Productus magnicostatus. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 641. Coal Measures: Johnson County, Missouri.

## Productus magnus Meek and Worthen.

1861. Productus magnus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 142. Keokuk L. S.: Monroe County, Illinois; Ste. Genevieve County, Missouri.

1868. Productus magnus. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 528, pl. 20, figs. 7a-c.

Keokuk Group: Monroe County, Illinois; Ste. Genevieve County, Missouri,

1892. Productus magnus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 17A, fig. 15. Keokuk Group: Crawfordsville, Indiana.

1894. Productus magnus. Keyes, Mo. Geol. Surv., vol. 5, p. 41. Keokuk L. S.: Ste. Genevieve and St. Francisville, Missouri.

#### Productus margaritaceus Phillips.

1855. Productus margaritaceus. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 6.

Twelve miles northwest of Richmond, Missouri.

## Productus marginicinctus Prout.

1857. Productus marginicinetus. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 43 pl. 2, figs. 1-16.

St. Louis L. S.: St. Louis, Missouri.

1858. Productus marginioinctus. Hall, Geol. Iowa. vol. 1, pt. 2, p. 674, pl. 24, figs. 3a-c.

St. Louis L. S.: St. Louis, Missouri; Milan, Illinois.

1894. Productus marginicinctus. Keyes, Mo. Geol. Surv., vol. 5, p. 43. St. Louis L. S.: St. Louis, Missouri; Keokuk, Iowa.

#### Productus Martini Sowerby.

1863. Producta Martini. Winchell, Proc. Acad. Nat. Sci. Phil., p. 4. Yellow S. S. and Burlington L. S.: Burlington, Iowa. Also see Productus cora.

# Productus mesialis Hall.

1858. Productus mesialis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 636, pl. 19, figs. 2a-c. Keokuk L. S.: Nauvoo, Illinois.

# Productus boliviensis D'Orbigny.

1847. Productus boliviensis. De Koninck, Monog. du Gen. Prod. et Chon., p. 77, pl. 8, figs. 2 a-c.

Carboniferous L. S.: Bolivia, South America.

1855. Productus Boliviensis. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 11.

Coal Measures: 12 miles northwest of Richmond, Missouri.

## Productus boonensis Swallow.

1858. Productus Boonensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 217. Coal Measures: Near mouth of Platte River, Nebraska; Kansas.

#### Productus boonensis var. elevata Swallow.

1858. Productus Boonensis var. elevata. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 217.

Coal Measures: Kansas and Nebraska.

## Productus buchianus de Koninck.

1855. Productus Buchianus. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 20.

Coal Measures: Big Creek, Posey County, Indiana.

#### Productus burlingtonensis Hall.

1858. Productus flemingi var. burlingtonensis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 598, pl. 12, figs. 3 a-g.

Burlington L. S.: Burlington, Iowa; Quincy, Illinois.

1877. Productus Flemingi var. Burlingtonensis. Hall and Whitfield, U. S. Geol. Exped., 40 Par., vol. 4, p. 285, pl. 5, figs. 9-12.
Lower Carboniferous L. S.: North of Snowstorm Hill, Dry Canyon,

Oquirrh Mountains, Utah.

1883. Productus Flemingi var. Burlingtonensis. Hall, Rep. N. Y. State Geol. for

1882, pl. (18) 49, figs. 6-8. Burlington L. S.: Burlington, Iowa.

1888. Productus flemingi var. burlingtonensis. Herrick, Bull. Den. Univ., vol. 3, p. 32, pl. 3, figs. 20 (22?).

Waverly Group: Licking County, Ohio.

1892. Productus Flemingi var. Burlingtonensis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 18, figs. 6-8.
Burlington L. S.: Burlington, Iowa.

1894. Productus burlingtonensis. Keyes, Mo. Geol. Surv., vol. 5, p. 41.

Burlington L. S.: Hannibal, Helton, Louisiana, Springfield, and Ash Grove, Missouri.

Keokuk L. S.: St. Francisville and Boonville, Missouri.

#### Productus calhounanus Swallow.

1858. Productus Calhounianus. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 181.

Lower Permian: Kansas.

1858. Productus Calhounianus. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 215. Upper Coal Measures and Permian: Kansas.

1859. Productus Calhounianus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 389.

White and Dark Permian L. S.: Guadalupe Mountains.

1859. Productus Calhounianus. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 26.

Upper Coal Measures: Fort Riley and Cottonwood Creek, Kansas.

1861. Productus Calhounianus. Newberry, Ives's Colo. Expl. Exped., p. 123.

Carboniferons: Kansas.

Also see Productus cora.

#### Productus calhounanus var. kansasensis Swallow.

1858. Productus Calhonnianus var. Kansasensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 216.

Upper Coal Measures and Permian: Kansas. Mountain L. S. and Coal Measures: Missouri.

## Productus cancrini. See Productus pertenuis.

## Productus carbonarius De Koninck.

1855. Productus carbonarius. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 11.

Mountain L. S.: Fountain Bluff, Illinois.

## Productus cestriensis Worthen.

1855. Productus elegans. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 3, pl. 1, figs. 7a-c. (Not P. elegans McCoy.)

Mountain L. S.: Chester and Kaskaskia, Illinois; Missouri, near Hat Island.

1860. Productus Cestrioneis. Worthen, Trans. St. Louis Acad. Sci., vol. 1, p. 570. Chester L. S.: Chester. Illinois.

1877. Productus elegans. Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 268, pl. 5, figs. 3, 4.
Lower Carboniferous L. S.: North of Snowstorm Hill, Dry Canyon Oquirrh Mountains, Utah.

1891. Productus elegans. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 581, pl. 13, figs. 15, 16.

Maxville L. S.: Ohio.

1894. Productus cestriensis. Keyes, Mo. Geol. Surv., vol. 5, p. 44. Kaskaskia L. S.: Ste. Mary, Missouri.

1895. Productus elegans. Whitfield, Geol. Surv. Ohio, vol. 7, p. 669, pl. 9, figs. 15, 16.
Maxville L. S.: Ohio.

1897. Producțus cestriensis. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 256, pl. 16, figs. 7-9.
Batesville S. S.: Batesville, Arkansas.

#### Productus clavus Norwood and Pratten.

1855. Productus clarus. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 10, pl. 1, figs. 4a-c.

Coal Measures: Grayeville, Illinois.

#### Productus compressus Say.

1823. Productus compressus. Say, Long's Exped. to Rocky Mts., vol. 1, p. 150 (foot note).

Missouri River, 5 miles below Council Bluffs.

1897. Productus compressus. Harris, Bull. Am. Pal., vol. 1, p. 384 (114).

Productus concentricus. See Productella concentrica.

#### Productus confragosus Conrad.

1835. Productus confragosus. Conrad, Trans. Geol. Soc. Penn., vol. 1, pt. 2, p. 267, pl. 12, fig. 5.

## Productus cooperensis Swallow.

1860. Productus Copoerensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 649. Chouteau L. S.: Cooper County, Missouri.

1865. Producta Cooperensis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 115. Bed No. 1: Burlington, Iowa.

1870. Producta Cooperensist Winchell, Proc. Am. Phil. Soc., vol.11, p. 249. Waverly Group: Sciotoville, Ohio.

## Productus nebraskensis Owen-Continued.

- 1886. Productus Nebrascensis? Heilprin, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 268, figs. 4, 4b.
  - Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.
- 1887. Productus Nebrascensis. Herrick, Bull. Den. Univ., vol. 2, p. 49, pl. 2, fig. 30. Coal Measures: Flint Ridge, Ohio.
- 1888. Productus Nebrasconsis (?) Herrick, Bull. Den. Univ., vol. 3, p. 31, pl. 1, fig. 24; pl. 3, figs. 25 (?), 25a.
  - Waverly Group: Licking County, Ohio.
- 1892. Productus Nebrascensis. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 22, fig. 7.
  - Coal Measures: Lasalle, Illinois.
- 1892. Productus Nebrascensis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 19. figs. 5-7.
  - Coal Measures: Lasalle, Illinois.
- 1894. Productus nebrascensis. Keyes, Mo. Geol. Surv., vol. 5, p. 48, pl. 37, figs. 3a-c. Upper Coal Measures: Kansas City, Missouri.

#### Productus nevadensis Meek.

- 1877. Productus Nevadensis. Meek, U. S. Geol. Surv. 40 Par., vol. 4, p. 64, pl. 8, figs. 2-2c.
  - Carboniferous: West side of Buell Valley; Summit Spring Pass; Ruby Valley; White Pine Mountains, Nevada.

#### Productus newberryi Hall.

- 1857. Productus newberryi. Hall, 10th Rep. N. Y. State Cab. Nat. Hist., p. 180. Chemung S. S.: Medina County, Ohio.
- 1883. Productella Newberryi. Hall, Rep. N. Y. State Geol. for 1882, pl. (18) 49, figs. 1-3.
  - Waverly Group: Medina and Newark, Ohio.
- 1888. Productus newberryi. Herrick, Bull. Den. Univ., vol. 4, p. 20, pl. 10, figs. 24, 35.
  - Waverly Group: Bagdad, Weymouth, Medina, Lodi, Burbank, and Cuyahoga Falls, Ohio.
- 1892. Productus Newberryi. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 22, fig. 8.
  - Waverly S. S.: Medina, Ohio.
- 1892. Productus Newborryi. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 18, figs. 1-3. Waverly S. S.: Medina and Newark, Ohio.

#### Productus newberryi var. annosus Herrick.

- 1888. Productus (newberrys var.?) annosus. Herrick, Bull. Den. Univ., vol. 4, p. 20, pl. 3, fig. 17.
  - Waverly Group: Alexandria, Ohio.
- 1895. Productus newberryi var. annosus. Herrick, Geol. Surv. Ohio, vol. 7, pl. 23, fig. 13.
  - Cuyahoga Shale: Licking County, Ohio.

#### Productus nodocostatus Herrick.

1888. Productus nodocostatus. Herrick, Bull. Den. Univ., vol. 4, p. 23, pl. 3, fig. 10. Waverly Group: Rushville, Ohio.

#### Productus nodosus Newberry.

- 1861. Productus nodosus. Newberry, Ives's Colo. Expl. Exped., p. 124, pl. 1, figs. 7-7b.
  - Carboniferous L. S.: Santa Fe, New Mexico.
- 1876. Productus nodosus. Newberry, U. S. Expl. Exped. from Santa Fe to Grand and Green rivers, p. 140, pl. 3, figs. 3-3d.
  - Upper Coal Measures: New Mexico and Utah.

## Productus norwoodi Swallow.

1858. Productus (Strophalosia?) Norwoodii. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 182.

Lower Permian: Valley of Cottonwood, Kansas.

- 1859. Productus Norwoodii. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 389.

  Dark Permian L. S.: Guadalupe Mountains.
- 1859. Productus Norwoodi. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 25.
  Upper Coal Measures: Fort Riley and Leavenworth, Kansas.

#### Productus occidentalis Newberry.

1861. Productus occidentalis. Newberry, Ives's Colo. Expl. Exped., p. 122, pl. 2, figs. 9, 10.

Upper Carboniferous (Cherty L. S.): Banks of Cascade River, near junction of Great and Little Colorado.

#### Productus ovatus Hall.

1858. Productus ovatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 674, pl. 24, fig. 1. St. Louis L. S.: Ottumwa and Keosauqua, Iowa; St. Louis, Missouri.

1883. Productus oratus. Hall, Rep. N. Y. State Geol. for 1882, pl. (18) 49, fig. 19. Keokuk L. S.: New Providence, Indiana.

1892. Productus ovatus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 18, fig. 19. Keokuk L. S.: New Providence, Indiana.

1894. Productus ovatus. Keyes, Mo. Geol. Surv., vol. 5, p. 44. St. Louis L. S.: St. Louis, Missouri.

#### Productus parvulus Winchell.

1863. Producta parcula. Winchell, Proc. Acad. Nat. Sci. Phil., p. 4. Yellow S. S.: Burlington, Iowa.

# Productus parvus Meek and Worthen.

1860. Productus parvus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 450. Chester L. S.: Chester, Illinois.

1866. Productus parcus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 297, pl. 23, figs. 4a-e.

Chester Group: Chester, Illinois.

1874. Productus Parvus. White, Prelim. Rep. Inv. Foss., p. 17.
Subcarboniferous: Mountain Spring, Old Mormon Road, Nevada.

1877. Productus parvus. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 83, pl. 5, figs. 6a, b.

Subcarboniferous: Mountain Spring, Old Mormon Road, Nevada.

1888. Productus parvus. Herrick, Bull. Den. Univ., vol. 4, pl. 11, fig. 11. Chester L. S.: Ohio.

## Productus pectenoides Say.

1823. Productus pectenoides. Say, Long's Exped. to Rocky Mts., vol. 1, p. 150. (footnote.)

Missouri River, 5 miles below Council Bluffs.

1897. Productus pectenoides. Harris, Bull. Am. Pal., vol. 1, p. 384 (114).

#### Productus pertenuis Meek.

1866. Productus Canorini. Geinitz, Carb. und Dyas in Nebr., p. 54, tab. 4, fig. 6. (Not P. canorini deKon., 1843.) Nebraska City, Nebraska.

1872. Productus pertennis. Meek, U. S. Geol. Surv. Nebr., p. 164, pl. 1, figs. 14a-c; pl. 8, figs. 9a-d.

Upper Coal Measures: Nebraska City and Brownville, Nebraska; Grasshopper Creek, 12 miles west of Leavenworth and at Atchison, Kansas.

Bull. 153----32

## Productus phillipsi Norwood and Pratten.

1855. Productus Phillipsi. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 8, pl. 1, figs. 2a-c.

Mountain L. S.: "Big Canyon" of Humboldt River, Utah Territory.

## Productus pileiformis McChesney.

1859. Productus piloiformis. McChesney, Desc. New Pal. Foss., p. 40. Kaskaskia L. S.: Chester, Illinois.

1891. Productus pileiformis. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 582, pl. 13, figs. 13, 14.

Maxville L. S.: Ohio.

1895. Productus pileiformis. Whitfield, Geol. Surv. Ohio, vol. 7, p. 470, pl. 9, figs. 13. 14.

Maxville L. S.: Ohio.

## Productus pileolus Shumard.

1858. Productus pileolus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 291. White Permian L. S.: Guadalupe Mountains.

1859. Productus pileolus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 389. White Permian L. S.: Guadalupe Mountains.

# Productus pocillum Morton.

1836. Productus pocillum. Morton, Am. Jour. Sci. (1), vol. 29, p. 150, pl. 2, fig. 2. Coal Measures: Ohio Valley.

## Productus popei Shumard.

1858. Productus Popei. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 290. Permian: New Mexico and Texas.

1859. Productus Popei. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 389, pl. 11, fig. 8.

White Permian L. S.: Guadalupe Mountains.

#### Productus portlockianus. See Productus costatus.

Productus prattenianus. See Productus cora.

#### Productus punctatus Martin.

- 1836. Productus punctatus? Morton, Am. Jour. Sci. (1), vol. 29, p. 153, pl. 26, fig.38.

  Coal Messures: Ohio Valley.
- 1838. Producta semipunctata. Shepard, Am. Jour. Sci. (1), vol. 34, p. 153, fig. 9. Limestone: Peru, Illinois.
- 1847. Productus punctatus. DeKoninck, Monog. du Gen. Prod. et Chon., p. 123, pl. 12, figs. 2a-k.
  Carboniferous: Zanesville, Ohio; Eddyville and Louisville, Kentucky.
- 1854. Productus punctatus. Shumard, Marcy's Expl. Red River of Louis., p. 175, pl. 1, fig. 5; pl. 2, fig. 1.

Carboniferous: Washington County, Arkansas.

1855. Productus punotatus. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 19.

Mountain L. S.: Warsaw, Illinois.

Coal Measures: 12 miles northwest of Richmond, Missouri; near Caseyville, Illinois.

1858. Productus punctatus. Marcou, Geol. N. A., p. 48, pl. 6, fig. 2.
Mountain L. S.: Tigeras, Pecos Village, and in the Sierra de Mogoyon,
New Mexico.

1860. Productus tubulospinus. McChesney, Desc. New Pal. Foss., p. 37.
Coal Measures: Western States.

1865. Productus tubulospinus. McChesney, Ill. New Spec. Foss., pl. 1, figs. 10, 11.

1868. Productus punctatus. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 27, pl. 1, figs. 10, 11.

Upper and Lower Coal Measures: Throughout the Western States.

# Productus punctatus Martin—Continued.

1872. Productus punctatus. Meek, U. S. Geol. Surv. Nebr., p. 169, pl. 2, fig. 6, pl. 4, fig. 5.

Upper Coal Measures: Nebraska City, Bennett's Mill, Wyoming, Rock Bluff, Plattsmouth and Bellevue, Nebraska; Illinois; Iowa; Missouri.

Lower Coal Measures: Missouri; Iowa; Illinois.

Lower Carboniferous: Missouri; Iowa; Illinois.

1873. Productus Punctatus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 569, pl. 25, fig. 13.
 Upper and Lower Coal Measures: Illinois.

1876. Productus punctatus. White, Powell's Rep. Geol. Uinta Mts., p. 89.

Lower Aubrey Group: Confinence of Grand and Green rivers, Utah.

1877. Productus punctatus. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 114, pl. 7, figs. 2a-c.

Carboniferous: At and near top of Grass Mountain, Ely Range, 35 miles north of Pioche, Nevada.

1878. Productus sp. allied to P. punctatus. Etheridge, Quart. Jour. Geol. Soc. Lond., vol. 34, p. 630.
Carboniferous: Feilden Isthmus, latitude 82° 43'.

1882. Productus punctatus. White, 11th Rep. Geol. Surv. Ind., p. 373, pl. 42, figs. 1-3.
Coal Measures: Newport, Indiana.

1883. Productus punctatus. Hall, Rep. N. Y. State Geol. for 1882, pl. (19) 50, figs. 14-16.

1883. Productus Rogersi. Hall, Rep. N. Y. State Geol. for 1882, pl. (19) 50, figs. 17, 18.

Coal Measures.

1884. Productus punctatus. White, 13th Rep. Geol. Surv. Ind., p. 124, pl. 27, figs. 1-3.

Coal Measures: Vermilion, Vigo, Sullivan, Vanderberg, Dubois, Warrick, and Pike counties, Indiana.

1887. Productus punctatus. Herrick, Bull. Den. Univ., vol. 2, p. 48, pl. 2, fig. 29. Coal Measures: Flint Ridge, Ohio.

1892. Productus punctatus. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 22, figs. 9, 10.
Coal Measures: Mississippi Valley.

1892. Productus punctatus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 17A, fig. 21; pl. 19, figs. 14-17.
Upper Coal Measures: Near Kansas City, Missouri; Missouri.

1894. Productus punctatus. Keyes, Mo. Geol. Surv., vol. 5, p. 51, pl. 37, figs. 1a-c. Upper Coal Measures: Kansas City, Missouri.

1897. Productus punctatus. Smith, Proc. Am. Phil. Soc., vol. 35, p. 29, pl. 22, fig. 7. Lower Coal Measures: Conway County, Arkansas.

#### Productus pustulosus Phillips.

1858. Productus pustulosus. Marcou, Geol. N. A., p. 48, pl. 6, fig. 1. Mountain L. S.: Tigeras, New Mexico.

1859. Productus pustulosus (?). Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 26.

Coal Measures: Leavenworth, Kansas.

Productus pyxidatus. See Productella pyxidata.

## Productus pyxidiformis DeKoninck.

1858. Productus pyxidiformis. Marcou, Geol. N. A., p. 48, pl. 6, figs. 3, 3a. Mountain L. S.: Tigeras, New Mexico.

#### Productus raricostatus Herrick.

- 1888. Productus (Productella) lachrymosus var. stigmarius. Herrick, Bull. Den. Univ., vol. 3, p. 34, pl. 3, fig. 28. (Not. P. lachrymosus var. stigmata Hall, 1867.)
  - Waverly Group: Licking County, Ohio.
- 1888. Productus rarioostatus. Herrick, Bull. Den. Univ., vol. 4, p. 19, pl. 3, fig. 19. Waverly Group: Moot's Run, Licking County, Ohio.
- 1895. Productus raricostatus. Herrick, Geol. Surv. Ohio, vol. 7, pl. 23, fig. 9. Cuyahoga Shale: Moot's Run, Licking County, Ohio.
- Productus rogersi. See Productus punctatus and Productus nebraskensis.

#### Productus rushvillensis Herrick.

- 1888. Productus rushvillensis. Herrick, Bull. Den. Univ., vol. 4, p. 22, pl. 3, fig. 15. Waverly Group: Rushville, Newark, and Loudonville, Ohio.
- 1895. Productus rushvillensis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 23, fig. 15.
  One hundred feet above Conglomerate II (Waverly Group): Rushville, Newark, and Loudonville, Ohio.

# Productus scabriculus Martin.

- 1855. Productus scabriculus. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 17.
  Coal Measures.
- 1858. Productus scabriculus. Marcon, Geol. N. A., p. 47, pl. 5, figs. 6, 6a. Mountain L. S.: Pecos Village and on summit of Sierra de Sandia.
- 1861. Productus scabriculus. Newberry, Ives's Colo. Expl. Exped., p. 125.
  Upper Carboniferons: Near Santa F6, New Mexico.

#### Productus scitulus Meek and Worthen.

- 1860. Productus scitulus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 451. St. Louis L. S.: Alton, Illinois.
- 1866. Productus scitulus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 280, pl. 20, figs. 5a-d.
  - St. Louis L. S.: Alton, Illinois.

# Productus semipunctatus. See Productus punctatus.

# Productus semireticulatus Martin.

- 1847. Productus semireticulatus. De Koninck, Monog. du Gen. Prod. et Chon., p. 83, pl. 8, figs. 1a-h; pl. 9, figs. 1a-m; pl. 10, figs. 1a-d.
  - Carboniferous: Harrisville, Bagdad, Cuyahoga, Zanesville, Flint Ridge, Greensburg, and Antrim, Ohio; near Louisville, Kentucky; near St. Louis and St. Charles, Missouri; Leavenworth, on the Missouri River; Long Creek, Crawfordsville, and near New Harmony, Indiana; Sparta, Illinois; Bolivia, South America.
- 1855. Productus semireticulatus. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 11.
  - Mountain L. S.: Western States.
- 1855. Productu's Semireticulatus var. Frigidus. Salter, Belcher's "Last of the Arctic Voyages," p. 388, pl. 36, figs. 13, 14.
  Carboniferous: Depot Point.
- 1856. Productus semireticulatus. Hall, Pac. R. R. Rep., vol. 3, p. 103, pl. 2, figs. 16, 17.
  Carboniferous: Pecos Village, New Mexico.
- 1858. Productus semi-reticulatus. Marcou, Gool. N. A., p. 46, pl. 5, figs. 4, 4s; pl. 6,
  - Mountain L. S.: Sierra Madre, Sierra de Mogoyon, Pecos Village, Tigeras in the Canyon of San Antonio, Sierra de Sandia, Great Salt Lake, sources of Rio Colorado Chiquito in the Sierra Blanca; El Paso, State of Chihuahua; junction of Rio San Pedro with Rio Gila, Arizona Territory; Vancouver Island.

#### Productus semireticulatus Martin-Continued.

- 1858. Productus semireticulatus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 292.
  - White Permian L. S.: Guadalupe Mountains.
- 1859. Productus semireticulatus var. antiquatus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 389.
  - White Permian L. S.: Guadalupe Mountains.
- 1861. Productus semireticulatus. Newberry, Ivee's Colo. Expl. Exped., p. 124.
  Upper Carboniferous: Cherty L. S., near junction of Great and Little Colorado rivers; Pecos Village.
- 1863. Productus semireticulatus. Davidson, Quart. Jour. Geol. Soc. Lond., vol. 19, p. 174, pl. 9, figs. 20, 21.
  - Lower Carboniferous L. S.: Windsor, Brookfield, Shubenacadie, East River, Debert River, Minudie, Pugwash, near Amherst, Boulardarie, Cape Breton, Horton Bluff, Grays River, etc., Nova Scotia.
- 1864. Productus semireticulatus. Meek, Pal. Cal., vol. 1, p. 11, pl. 2, figs. 4, 4a. Carboniferous: Bass's Ranch, Shasta County, California.
- 1865. Producta semireticulata. Winchell, Proc. Acad. Nat. Sci. Phil., p. 115.
  Marshall Group: Weymouth, Medina County, Ohio; Orange, Cuyahoga
  County, Ohio.
- 1868. Productus semireticulatus. Dawson, Acad. Geol., p. 296, pl. 97a, b.
  Carboniferous L. S.: Windsor, Brookfield, Shubenacadie, East River, De
  Bert River, Minudie, Pugwash, near Amherst, Boulardarie, Cape Breton,
  Horton Bluff, Gays River, etc., Nova Scotia.
- 1869. Producta semireticulata. Winchell, Safford's Geol. of Tenn., p. 442.
  Immediately above Black Shale: Manchester, Cannon County, Tennessee.
- 1870. Producta semireticulata. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 249.
  Waverly Group: Newark, Sciotoville, Rockville, and Vinton County, Ohio;
  near Shafer's, Venango County, Pennsylvania.
- 1872. Productus semireticulatus. Meek, U. S. Geol. Surv. Nebr., p. 160, pl. 5, figs. 7a, b.
  - Upper Coal Measures: Nebraska City, 2<sup>a</sup> miles west of Nebraska City, Bennett's Mill, Wyoming, Cedar Bluff, Rock Bluff, Bellevue, Omaha, Plattsmouth, Brownville, Peru, and Aspinwall, Nebraska.
  - Upper and Lower Coal Measures: Iowa; Illinois; Kansas; Missouri; New Mexico.
- 1874. Productus semireticulatus. Derby, Bull. Cornell Univ. (Sci.), vol. 1, No. 2, p. 47, pl. 4, fig. 8; pl. 6, fig. 18; pl. 7, figs. 5-7, 15, 16.
  Coal Measures: Bomjardim and Itaituba, Brazil.
- 1876. Productus semireticulatus. White, Powell's Rep. Geol. Uinta Mts., p. 90.

  Lower Aubrey Group: Confluence of Grand and Green rivers, Utah.
- 1877. Productus semireticulatus. Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 69, pl. 7, fig. 5.
  Carboniferous: Railroad Canyon, Diamond Mountains; Fossil Hill, White Pine Mountains, Nevada.
- 1877. Productus semireticulatus. Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 267, pl. 5, figs. 5, 6.
  - Lower Carboniferous L. S.: North of Snowstorm Hill, Dry Canyon, Oquirrh Mountains, Utah.
- 1877. Productus semireticulatus. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 111, pl. 8, figs. 1a-c.
  - Carboniferous: Near Bear Spring, Camp Wingate, and near Santa F6, New Mexico; Camp Cottonwood, Old Mormon road, Lincoln County, and top of Grass Mountain, Ely range, 35 miles north of Pioche, Nevada; head of Partridge Creek; near Bill Williams's Mountain; Tenney's Ranch; Kaibab Plateau; head of Dry Fork, and Kanab Canyon (Anbrey L.S.), Arizona; creet of liurricane Hill, near Toquerville, and Meadow Creek, south of Fillmore, Utah.

#### Productus semireticulatus Martin—Continued.

- 1878. Productus semireticulatus. Etheridge, Quart. Jour. Geol. Soc. Lond., vol. 34, p. 629.
  - Carboniferous: Feilden Isthmus, latitude 820 43'.
- 1883. Productus semireticulatus. Hall, Rep. N. Y. State Geol. for 1882, pl. (19) 50, figs. 19-23.

Coal Measures: Brazil, South America.

1884. Productus semireticulatus. White, 13th Rep. Geol. Surv. Ind., p. 125, pl. 24, figs. 1-3.

Coal Measures: Indiana.

- 1888. Productus semireticulatus. Herrick, Bull. Den. Univ., vol. 3, p. 31, pl. 1, fig. 26; pl. 6, fig. 11; pl. 10, figs. 6, 6a.
  Waverly Group: Licking County, Ohio.
- 1892. Productus semireticulatus. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 22, fig. 2.

Coal Measures: Newcastle, Ohio.

1892. Productus semireticulatus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 17A, figs. 16-18; pl. 19, figs. 19-23.

Coal Measures: Perry County and Newcastle, Ohio; Itaituba, Brazil,

1894. Productus semireticulatus. Keyes, Mo. Geol. Surv., vol. 5, p. 50, pl. 36, figs. 4a-c.

Upper Coal Measures: Creighton and Calhoun, Missouri.

1897. Productus semireticulatus. Smith, Proc. Am. Phil. Soc., vol. 35, p. 90.

Lower Coal Measures: White County, Arkansas.

Marshall Shale: Stone County, Arkansas.

Fayetteville Shale: Searcy County, Arkansas.

Boone Chert: Searcy County, Arkansas.

See also Productus cora and Productus setigerus.

Productus semireticulatus var. antiquatus. See Productus semireticulatus.

# Productus semistriatus Meek.

- 1860. Productus semistriatus. Meek, Proc. Acad. Nat. Sci. Phil., p. 309.

  Coal measures: Timpanogos Canyon, latitude 40° 22', longitude 111° 38'.
- 1876. Productus semistriatus. Meek, Simpson's Expl. Gt. Basin, Utah, p. 349, pl. 1, figs. 7a, b.

Coal Measures: Timpanogos Canyon.

1877. Productus semistriatus. Meek, U. S. Geol. Expl. 40 Par., p. 74, pl. 7, figs. 8, 8a. Carboniferous L. S.: Southeast of Great Salt Lake, Utah.

# Productus setigerus Hall.

- 1858. Productus setigerus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 638, pl. 19, fig. 3. Keokuk L. S.: Keokuk, Iowa.
- 1858. Productus setigerus? var. keokuk. Hall, Geol. Iowa, vol. 1, pt. 2, p. 639, pl. 19, figs. 4b, c.

Keokuk L. S.: Keokuk, Iowa; Warsaw, Illinois.

- 1858. Productus semireticulatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 637, pl. 19, fig. 4a. Keokuk L. S.: Keokuk, Iowa.
- 1883. Productus semireticulatus. Hall, Rep. N. Y. State Geol. for 1882, pl. (18) 49, figs. 11-13.

Keokuk L. S.: Warsaw, Illinois.

1892. Productus semireticulatus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 18, figs. 11-13.

Keokuk Group: Warsaw, Illinois.

Productus shumardianus. See Productella shumardana.

Productus speciosus. See Productella speciosa.

Productus spinosus Sav.

1823. Productus spinosus. Say, Long's Exped. to Rocky Mts., vol. 1, p. 106 note).

From Fort Osage.

1897. Productus epinosus. Harris, Bull. Am. Pal., vol. 1, p. 379 (109).

Productus spinulicostus. See Productella spinulicosta.

Productus splendens. See Productus longispinus.

Productus subaculeatus. See Productella subaculeata.

#### Productus subhorridus Meek.

1877. Productus subhorridus. Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 75, figs. 3-3b.

Carboniferous L. S.: Wasatch Mountains; Hamilton Butte, Ruby G Mahogany Peak, Egan Mountains and north slope of Moleen Peak, Range, west side of Long Valley, Ruby Group.

#### Productus subserratus Say.

1823. Productus subservatus. Say, Long's Exped. to Rocky Mts., vol. 1, (footnote).

Missouri River, 5 miles below Council Bluffs.

1897. Productus subservatus. Harris, Bull. Am. Pal., vol. 1, p. 381 (111).

## Productus swallovi Beecher.

1863. Koninokina Americana. Swallow, Trans. St. Louis Acad. Sci., vol. 2, (Not Productus americanus Swallow.)

Third Archimedes L. S.: Barrett's Station, St. Louis County, Missou 1890. Productus Swallovi. Beecher, Am. Jour. Sci. (3), vol. 40, p. 215.

## Productus symmetricus McChesney.

1860. Productus symmetricus. McChesney, Desc. New Pal. Foss., p. 35. Upper Coal Measures: Lasalle and Springfield, Illinois.

1865. Productus symmetricus. McChesney, Ill. New Spec. Foss., pl. 1, figs. 9

1868. Productus symmetricus. McChesney, Trans. Chicago Acad. Sci., v p. 25, pl. 1, figs. 9a, b.

Upper Coal Measures L. S.; Lasalle and Springfield, Illinois.

1872. Productus symmetricus. Meek, U. S. Geol. Surv. Nebr., p. 167, pl. 5, figs. pl. 8, fig. 13.

Upper Coal Measures: Nebraska City, Bennett's Mill, Peru, and Bell Nebraska; Kansas; Iowa; Missouri; Illinois.

Lower Coal Measures: Illinois.

1884. Productus symmetricus. White, 13th Rep. Geol. Surv. Ind., p. 123, 1 figs. 1, 2.

Coal Measures: Vermilion, Vigo, Sullivan, Vanderburg, Dubois, Wa and Pike counties, Indiana.

1892. Productus symmetricus. Hall and Clarke, Int. to Study of Brach., pl. 22, fig. 4.
Upper Coal Measures: Near Kansas City, Missouri.

1892. Productus symmetricus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl figs. 19, 20.

Upper Coal Measures: Near Kansas City, Missouri.

1894. Productus symmetricus. Keyes, Mo. Geol. Surv., vol. 5, p. 48, pl. 36
2a, b.

Upper Coal Measures: Kansas City, Missouri.

#### Productus tenuicostus Hall.

1858. Productus tenutoestus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 675, pl. 24, figs. St. Louis L. S.: Milan, Illinois.

#### Productus tenuicostus Hall—Continued.

- 1883. Productus tenuicostus. Hall, Rep. N. Y. State Geol. for 1882, pl. (18) 49, fig. 18.
- 1892. Productus tenuicostatus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 18, fig. 18.

St. Louis, L. S.: Milan, Illinois.

1894. Productus tenuioostus. Keyes, Mo. Geol. Surv., vol. 5, p. 44. St. Louis L. S.: St. Louis, Missouri.

### Productus tubulospinus. See Productus punctatus.

# Productus undiferus De Koninck.

1855. Productus undiferus. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 9.

Coal Measures: Caseyville and Posey County, Indiana.

## Productus villiersi D'Orbigny.

1847. Productus villiersi. De Konnick, Monog. du Gen. Prod. et Chon., p. 109, pl. 11, figs. 1a-c.

Carboniferous L. S.: Bolivia, South America.

1855. Productus Villiersi. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 17.

Keg Creek, Missouri.

#### Productus viminalis White.

1862. Productus viminalis. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 29.
Upper Burlington L. S.: Burlington, Iowa.

#### Productus vittatus Hall.

1858. Productus vittatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 639. Keokuk L. S.: Keokuk, Iowa; Warsaw and Nauvoo, Illinois.

1883. Productus vittatus. Hall, Rep. N. Y. State Geol. for 1882, pl. (18) 49, figs. 15-17.

Keokuk L. S.: Near Keokuk, Iowa.

1892. Productus vittatus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 18, figs. 15-17.

Keokuk Group: Near Keokuk, Iowa.

1894. Productus vittatus. Keyes, Mo. Geol. Surv., vol. 5, p. 43. Keokuk L. S.: Trenton, Missouri; Keokuk, Iowa.

# Productus wabashensis Norwood and Pratten.

1855. Productus Wabashensis. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil.
 (2), vol. 3, p. 13, pl. 1, figs. 6a-d.
 Coal Measures: Near New Harmony, Indiana.

#### Productus weyprechti Toula.

1878. Productus Weyprechti? Etheridge, Quart. Jour. Geol. Soc. Lond, vol. 34, p. 631.

Carboniferous: Cape Joseph Henry, latitude 82° 50'.

# Productus wilberanus McChesney.

1860. Productus wilberanus. McChesney, Desc. New Pal. Foss., p. 36. Coal Measures: Charbonier, Missouri.

1865. Productus wilberanus. McChesney, Ill. New Spec. Foss., pl. 1, fig. 8.

1868. Productus Wilberanus. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 26, pl. 1, fig. 8.
Coal Measures: Charbonier, Missouri.

#### Productus wortheni Hall.

1858. Productus wortheni. Hall, Geol. Iowa, vol. 1, pt. 2, p. 635, pl. 19, figs. 1a-b. Keokuk L. S: Nauvoo, Illinois.

# Productus (species undetermined).

- 1852. Productus—(sp. indet.). Hall, Stansb. Exped. Gt. Salt Lake, p. 411, pl. 3, fig. 4.
  - Carboniferous: Missouri River, near Weston.
- 1868. Productus. Rogers, Geol. Rep. Penn., vol. 2, p. 833, fig. 687.
- 1875. Productus (undetermined sp.). Meek, Pal. Ohio, vol. 2, p. 282, pl. 10, figs. 4a-d.
  Waverly Group: Sciotoville, Ohio.
- 1875. Productus (undetermined sp.). Meek, Pal. Ohio, vol. 2, p. 283, pl. 10, fig. 3. Waverly Group: Sciotoville, Ohio.
- 1877. Productus —— (?). Whiteaves, Geol. Surv. Canada, Rep. of Prog., 1875-76, p. 101.
  - Devonian or Carboniferous: Fossil Point, Peace River, Canada.
- 1887. Productus sp. small individual. Herrick, Bull. Den. Univ., vol. 2, pl. 1, fig. 24.
- Coal Measures: Flint Ridge, Ohio.
- 1887. Productus sp. Herrick, Bull. Den. Univ., vol. 2, pl. 2, fig. 31.
  - Coal Measures: Flint Ridge, Ohio.
- 1888. Productus. Herrick, Bull. Den. Univ., vol. 3, pl. 7, fig. 26.
  Waverly Group: Licking County, Ohio.

# PRŒTUS Steininger, 1830.

# Prætus auriculatus Hall. See Prætus missouriensis.

#### Prætus doris Hall.

- 1860. Proetus doris. Hall, 13th Ann. Rep. N.Y. State Cab. Nat. Hist., p. 112. Goniatite L. S.: Rockford, Indiana.
- 1865. Phillipsia Doris. Winchell, Proc. Acad. Nat. Sci. Phil., p. 183. Goniatite L. S.: Rockford, Indiana.
- 1870. Phillipsia Doris. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 260. Waverly Group: Rockville, Ohio.
- 1887. Phillipsia doris. Herrick, Bull. Den. Univ., vol. 2, p. 62.
- 1887. Phillipsia doris. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 90. Goniatite L. S.: Rockford, Indiana.

### Prætus ellipticus Meek and Worthen.

- 1865. Proctus ellipticus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 267. Kinderhook Group: Jersey County, Illinois.
- 1868. Proctus ellipticus. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 460, pl. 14, fig. 8.
  Kinderhook Group: Jersey County, Illinois.
- 1887. Proetus ellipticus. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 82, pl. 3, fig. 3. Kinderhook Group: Jersey County, Illinois.

# Prætus granulatus Wetherby. See Griffithides granulatus.

# Protus loganensis Hall and Whitfield.

- 1877. Proetus Loganensis. Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 264, pl. 4, fig. 33.
  - Waverly Group: Logan Canyon, Wahsatch Range, Utah.
- 1887. Proctus loganensis. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 78. Waverly Group: Logan Canyon, Wahsatch Range, Utah.

### Prœtus longicaudus Hall.

- 1862. Prostus longicaudus. Hall, 15th Rep. N. Y. State Cab. Nat. Hist., p. 108. Hamilton ? Iowa.
- \*1876. Proëtus longicaudus. Hall, Ill. Devonian Foes., pl. 20, figs. 32-34.

# Protus longicaudus Hall—Continued.

- 1881. Proëtus longicaudus. Williams, Am. Jour. Sci. (3), vol. 21, p. 156. Upper Carboniferous: Near Madison, Greenwood County, Kansas.
- 1888. Pročius (†) longicaudus. Hall and Clarke, Pal. N. Y., vol. 7, p. 131, pl. 20, figs. 32-34.

#### ! Carboniferous.

#### Protus minutus Herrick.

- 1888. Proctus minutus. Herrick, Bull. Den. Univ., vol. 4, p. 56, pl. 1, figs. 7a, b. Waverly Group: Moot's Run, Licking County, Ohio.
- 1889. Proetus minutus. Herrick, Am. Geol., vol. 3, pl. 1, fig. 7.
- 1895. Pratus minutus. Herrick, Geol. Surv. Ohio, vol. 7, pl. 14, fig. 7. Waverly Group: Moot's Run, Licking County, Ohio.

#### Protus missouriensis Shumard.

- 1855. Proetus Missouriensis. Shumard, 1st and 2d Geol. Rep. Mo., p. 196, pl. B, figs. 13a, b.
- Lithographic L. S.: Hannibal, Louisiana, and Chouteau Springs, Missouri.

  1862. Proctus auriculatus. Hall, 15th Rep. N. Y. State Cab. Nat. Hist., p. 107.

  Chemung S. S.: Licking County, Ohio.
- 1865. Proetus Missouriensis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 133.
- 1887. Phillipsia shumardi. Herrick, Bull. Den. Univ., vol. 2, pp. 58 and 69, pl. 7, fig. 14.
  - Waverly Group: Granville, Ohio.
- 1887. Proetus missouriensis. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 75, pl. 3, fig. 1.
  - Lithographic L. S.: Hannibal, Louisiana, and Chouteau Springs, Missouri. Waverly Group: Granville, Ohio.
- 1888. Proëtus Missouriensis. Hall and Clarke, Pal. N. Y., vol. 7, p. 133, pl. 23, fig. 32.
  - Lithographic L. S.: Missouri.
  - Waverly Group: Licking County, Ohio.
- 1888. Phillipsia shumardi. Herrick, Bull. Den. Univ., vol. 3, p. 29, pl. 2, fig. 22; pl. 3, fig. 32.
  - Middle Waverly Freestone: Licking County, Ohio.
- 1888. Phillipsia (Prostus) auriculatus. Herrick, Bull. Den. Univ., vol. 4, p. 54, pl. 1, fig. 14.
  Waverly Group: Ohio.
- 1889. Proctus (Phillipsia) auriculatus. Herrick, Am. Geol., vol. 3, pl. 1, fig. 14.
- 1894. Proctus missouriensis. Keyes, Mo. Geol. Surv., vol. 4, p. 233.
  Louisiana (Lithographic) L. S.: Hannibal, Louisiana, and Chouteau Springs, Missouri.
- 1895. Prætus auriculatus. Herrick, Geol. Surv. Ohio, vol. 7, pl. 14, figs. 14, 15. Waverly Group: Near Granville and Newark, Ohio.

### Protus peroccidens Hall and Whitfield.

- 1877. Proctus perocoidens. Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 262, pl. 4, figs. 28-32.
  - Waverly Group: Ogden and Logan Canyons, Wahsatch Range, and Dry Canyon, Oquirrh Mountains, Utah.
- 1887. Proetus peroccidens. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 79.
  Waverly Group: Ogden, Logan Canyon, Wahsatch Range, and Dry Canyon, Oquirrh Mountains, Utah.

### Protus? placidus Vogdes.

- 1896. Proctus? placedus. Vogdes, Cal. Acad. Sci. (2), vol. 6, p. 198, fig. Chouteau L. S.: Sedalia and Providence, Missouri.
- Prætus præcursor Herrick. See Phillipsia præcursor.

#### Protus swallovi Shumard.

- 1855. Proetus Swallovi. Shumard, 1st and 2d Geol. Rep. Mo., p. 196, pl. B, figs. 12a, b.
  Lithographic L. S.: Chouteau Springs, Cooper County, and Moniteau
  - County, Missouri.
- 1887. Phillipsia swallori. Herrick, Bull. Den. Univ., vol. 2, p. 58, pl. 5, fig. 11. Chemung Group: Chouteau Springs, Cooper County, Missouri.
- 1894. Proctus swallovi. Keyes, Mo. Geol. Surv., vol. 4, p. 234.

  Louisiana (Lithographic) L. S.: Chouteau Springs, Missouri.

### Prætus tennesseensis Winchell.

- 1869. Phillipsia Tennesseensis. Winchell, Safford's Geol. Tenn., p. 445.
  Shales just above black shale: Hickman and Maury counties, Tennessee.
- 1870. Phillipsia Tennesseensis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 259. Waverly Group: Hickman and Maury counties, Tennessee.
- 1887. Proetus tennesseensis. Vogdes, Ann. N. Y. Acad. Sci., vol. 4, p. 80. Waverly Series: Hickman County, Tennessee.

### Prætus trinucleatus. See Phillipsia trinucleata.

### Prætus (species undetermined).

- 1888. Proctus (Phillipsia) sp. close to P. auriculatus. Herrick, Bull. Den. Univ., vol. 4, pl. 1, fig. 13.

  Waverly Group: Ohio.
- 1888. Proctus (?) (cf. haldemani). Herrick, Bull. Den. Univ., vol. 4, p. 55, pl. 1, fig. 12.
  Waverly Group: 1 mile east of Harlem, Licking County, Ohio.
- 1889. Proctus (Phillipsia) sp. close to P. auriculatus. Herrick, Am. Geol., vol. 3, pl. 1, fig. 13.
- 1889. Proetus (haldemanif) Herrick, Am. Geol., vol. 3, pl. 1, fig. 12.
- 1895. Pratus sp. ? (perhaps haldemani). Herrick, Geol. Surv. Ohio, vol. 7, pl.14, fig. 12.
  - Near base of Waverly Group: 1 mile east of Harlem, Licking County, Ohio.
- 1895. Proctus (†). Herrick, Geol. Surv. Ohio, vol. 7, pl. 14, fig. 13. Upper Waverly Group: Ohio.

### PROGONOBLATTINA Scudder, 1879.

#### Progonoblattina columbiana Scudder.

1895. Progonoblattina columbiana. Scudder, Bull. U. S. Geol. Surv., No. 124, p. 131, pl. 11, fig. 9.

Lower Coal Measures: Mazon Creek, Illinois.

# PROMACRUS Meek, 1871.

# Promacrus andrewsi Meek.

- 1871. Sanguinolites (Promacrus) Andrewsi. Meek, Am. Jour. Conch., vol. 7, p. 7. Waverly S. S.: Sciotoville, Ohio.
- 1875. Promacrus Andrewsi. Meek, Pal. Ohio, vol. 2, p. 308, pl. 17, figs. 1a, b. Waverly Group: Sciotoville, Ohio.

#### Promacrus cuneatus Hall.

- \*1870. Pholadella cuneata. Hall, Prelim. Not. Lamell. 2, p. 66. Yellow S. S.: Burlington, Iowa.
- 1885. Promacrus cuneatus. Hall, Pal. N. Y., vol. 5, pt. 1, p. 510, pl. 78, fig. 28. Yellow S. S.: Burlington, Iowa.

### Promacrus missouriensis Swallow.

- 1860. Solen (?) Missouriensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 655. Pike County, Missouri.
- 1871. Sanguinolites (Promacrus) Missouriensis. Meek, Am. Jour. Conch., vol. 7, p. 6, pl. 1, fig. 2.
  Chouteau L. S.: Pike County, Missouri.

#### Promacrus nasutus Meek.

1871. Sanguinolites (Promacrus) nasutus. Meek, Am. Jour. Conch., vol. 7, p. 6, pl. 1, fig. 1.

Chouteau L. S.: Chouteau Springs, Missouri.

### Promacrus truncatus Herrick.

1888. Promacra (?) truncatus. Herrick, Bull. Den. Univ., vol. 3, p. 60, pl. 3, fig. 30. Waverly Group: Licking County, Ohio.

## PROMYLACRIS Scudder, 1885.

### Promylacris harei Scudder.

1895. Promylaoris harei. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 48, pl. 2, fig. 3.
Upper Coal Measures: Kansas City, Missouri.

# Promylacris ovalis Scudder.

1885. Promylacris evale. Scudder, Proc. Acad. Nat. Sci. Phil., p. 34. Carboniferous: Mazon Creek. Illinois.

1890. Promylacris ovalis. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 403, pl. 31, figs. 1-4.
Carboniferous: Mazon Creek, Illinois.

1890. Promylacris oralis. Scudder, Foss. Insc. N. A., vol. 1, p. 380, pl. 23, figs. 1-4. Carboniferous: Mazon Creek, Illinois.

1895. Promylacris ovalis. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 50. Lower Coal Measures: Mazon Creek, Illinois,

### Promylacris rigida Scudder.

1890. Promylacris rigida. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 403, pl. 31, fig. 6.
Carboniferous: Mazon Creek, Illinois.

1890. Promylaoris rigida. Scudder, Foss. Insc. N. A., vol. 1, p. 380, pl. 23, fig. 6. Carboniferous: Mazon Creek, Illiuois.

1895. Promylacris rigida. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 50, pl. 3, fig. 1.

Lower Coal Measures: Braidwood, Illinois.

### Promylacris testudo Scudder.

1890. Promylacris testudo. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 403, pl. 32, fig. 6.
Carboniferous: Mazon Creek, Illinois.

1890. Promylacris testudo. Scudder, Foss. Insc. N. A., vol. 1, p. 379, pl. 24, fig. 6. Carboniferous: Mazon Creek, Illinois.

1895. Promylacris testudo. Scudder, Bull. U. S. Geol. Surv. No. 124, p. 49, pl. 2, fig. 2.

Lower Coal Measures: Mazon Creek, Illinois.

### PRONORITES Mojsisovics, 1882.

# Pronorites cyclolobus var. arkansiensis Smith.

1897. Pronorites cyclolobus var. arkansiensis. Smith, Proc. Am. Phil. Soc., vol. 35, p. 57, pl. 24, figs. 1-4.

Lower Coal Measures: Pilot Mountain, Carroll County, Arkansas.

## Pronorites (species undetermined).

1897. Pronorites sp. indet. Smith, Proc. Am. Phil. Soc., vol. 35, p. 60, pl. 20, fig. 2.

Upper Coal Measures: Scott County, Arkansas.

## PROPTETICUS Scudder, 1885.

# Propteticus infernus Scudder.

1885. Proptetious infernus. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 3, p. 334, pl. 31, figs. 3, 4.

Carboniferous: Near Georgetown, Vermilion County, Illinois.

1890. Propteticus infernus. Scudder, Foss. Insc. N. A., vol. 1, p. 298, pl. 17, figs. 3, 4. Carboniferous: Near Georgetown, Vermilion County, Illinois.

## (PROTASTER Forbes, 1849.)

Protaster barrisi. See Onychaster barrisi.

Protaster gregarius. See Aganaster gregarius.

# PROTHYRIS Meek, 1869.

## Prothyris elegans Meek.

1871. Prothyris elegans. Meek, Am. Jour. Conch., vol. 7, p. 8, pl. 1, fig. 3.
Coal Measures: Nebraska City, Nebraska; Ohio; Illinois; Michigan.

1872. Prothyris elegans. Meek, U. S. Geol. Surv. Nebr., p. 223, pl. 10, figs. 9a, b. Upper Coal Measures: Nebraska City, Nebraska.

1887. Prothyris (cf. elegans). Herrick, Bull. Den. Univ., vol. 2, p. 32, pl. 4, fig. 3. Coal Measures: Flint Ridge, Ohio.

### Prothyris meeki Winchell, MS.

1875. Prothyris Meeki. Winchell, Pal. Ohio, vol. 2, p. 305, pl. 15, fig. 2. Waverly Group: Rushville, Ohio.

1888. Prothyris meski. Herrick, Bull. Den. Univ., vol. 3, p. 66, pl. 8, fig. 7. Waverly Group: Licking County, Ohio.

1888. Prothyris meeki. Herrick, Bull. Den. Univ., vol. 4, pl. 4, fig. 2. Waverly Group: Gann, Ohio.

1889. Prothyris meeki. Herrick, Am. Geol., vol. 3, pl. 2, fig. 2.

1895. Prothyris meeki. Herrick, Geol. Surv. Ohio, vol. 7, pl. 16, fig. 2. Kinderhook: Ohio.

#### PROUTELLA- Ulrich, 1890.

#### Proutella discoidea Prout.

1860. Cyclopora discoidea. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 578. Keokuk L. S.: Warsaw, Illinois.

1866. Cyclopora discoidea. Prout, Geol. Surv. Ill., vol. 2, p. 420, pl. 22, fig. 10. Keokuk Group: Warsaw, Illinois.

1890. Proutella discoidea. Ulrich, Geol. Surv. Ill., vol. 8, p. 674, pl. 69, figs. 4-4d. Keokuk Group, Warsaw, Hamilton, and Nauvoo, Illinois; Keokuk, Iowa.

1894. Proutella discoidea. Keyes, Mo. Geol. Surv., vol. 5, p. 37. Keokuk L. S.: Keokuk, Iowa.

### PSEUDOMONOTIS Beyrich, 1862.

#### Pseudomonotis hawni Meek and Hayden.

1858. Monotis Hawni. Meek and Hayden, Trans. Albany Inst., vol. 4, p. 76.
Permian: Near mouth of Smoky Hill Fork of Kanasa River and Helena,
Kanasa.

### Pseudomonotis hawni Meek and Hayden-Continued.

- 1859. Monotis Hawni. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 28.
  Upper Coal Measures: South of Kansas Falls, Smoky Hill River, and Cottonwood Creek, Kansas.
- 1864. Emmiorotis Honori. Meek and Hayden, Pal. Up. Mo., p. 54, pl. 2, figs. 5e-c.
  Permian: Near month of Smoky Hill Fork of Kansas River, and between
  there and Council Grove; also on Cottonwood Creek, Kansas.
- 1884. Eumicrotis Hauni. White, 13th Rep. Geol. Surv. Ind., p. 142, pl. 30, fig. 10. Upper Coal Measures: Indiana.
- 1886. Eumicrotis Hawni. Heilprin, 2d Geol. Surv. Penn., Ann. Rep. 1885, p. 455.
  Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.
- 1886. Eumicrotts Hawni. Heilprin, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 271.
  Mill Creek, L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.

### Pseudomonotis hawni var. ovata Meek and Hayden.

1864. Eumicrotis Hawni var. ovata. Meek and Hayden, Pal. Up. Mo., p. 55, pl. 2, figs. 5a, b.

Permian: Near Cottonwood Creek, south of the Santa Fé Road, Kansas.

### Pseudomonotis hawni var. sinuata Meek and Worthen.

1866. Eumiorotis Hawni var. sinuata. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 338, pl. 27, figs. 12-12b, 13, 14.
Upper Coal Measures: Bridge of north branch of Saline River, Gallatin

# Pseudomonotis radialis Phillips.

County, Illinois.

- 1858. Monotis radialis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 187. Upper Permian: Smoky Hill Fork, Kansas.
- 1866. Avicula speluncaria. Geinitz, Carb. und Dyas, in Nebr., p. 28, tab. 2, fig. 12. Nebraska City, Nebraska; Council Grove, Kansas.
- 1872. Pseudomonotis radialis?? Meek, U. S. Geol. Surv. Nebr., p. 201, pl. 9, fig. 3. Upper Coal Measures: Nebraska City, Nebraska.
- 1887. Cf. Pseudomonotis radialis. Herrick, Bull. Den. Univ., vol. 2, p. 145, pl. 14, fig. 26.

Coal Measures: Flint Ridge, Ohio.

### Pseudomonotis (species undetermined).

1872. Pseudomonotis sp. Meek, U. S. Geol. Surv. Nebr., p. 200, pl. 2, fig. 11. Upper Coal Measures: Cedar Bluff and Rock Bluff, Nebraska.

(PTERIA Scopoli, 1777.)

### Pteria morganensis. See Avicula morganensis.

### PTERINEA Goldfuss, 1826.

#### Pterinea cardinata Winchell.

1862. Pterinea cardinata. Winchell, Proc. Acad. Nat. Sci. Phil., p. 412. Marshall S. S.: Pointe Aux Barques, Michigan.

### Pterinea crenistriata Winchell.

- 1862. Cardiopsis orenistriata. Winchell, Proc. Acad. Nat. Sci. Phil., p. 417. Marshall Group: Columbia, Michigan.
- 1865. Pterinea orenistriata. Winchell, Proc. Acad. Nat. Sci. Phil., p. 124.

### Pterinea gibbosa. See Monopteria gibbosa.

#### Pterinea newarkensis Meek.

1871. Pterinea (Pteronites?) newarkensis. Meek, Proc. Acad. Nat. Sci. Phil., p. 162.
Waverly Group: Newark, Ohio.

### Pterinea pintoensis Walcott.

1884. Pterinea Pintöensis. Walcott, Pal. Eureka Dist., p. 234, pl. 19, fig. 10. Lower Carboniferous: Eureka District, Nevada.

### Pterinea spinalata Winchell.

1863. Avioula acanthoptera. Winchell, Proc. Acad. Nat. Sci. Phil., p. 8. (Not A. acanthoptera Hall, 1843.)

Yellow S. S.: Burlington, Iowa.

1865. Pterinea spinulata. Winchell, Proc. Acad. Nat. Sci. Phil., p. 124.

### Pterinea strigosa White.

1862. Gervillia strigosa. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 31. Chemung Group: Burlington, Iowa.

#### Pterinea undulata Meek and Worthen.

1868. Ptorinos? undulata. Meek and Worthen, Gool. Surv. Ill., vol. 3, p. 456, pl. 14, fig. 5.

Kinderhook Group: Burlington, Iowa; & Kinderhook, Illinois.

### PTERINOPECTEN Hall, 1883.

### Pterinopecten ashlandensis Herrick.

1888. Pterinopecton (?) ashlandensis. Herrick, Bull. Den. Univ., vol. 4, p. 33, pl. 11, fig. 4.

Waverly Group: Lyon Falls, Ashland County, Ohio.

1895. Pterinopecten ashlandensis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 22, fig. 22. Cuyahoga Shale: Near Ashland, Ohio.

## Pterinopecten cariniferus Herrick.

1888. Pterinopecten cariniferus. Herrick, Bull. Den. Univ., vol. 3, p. 58, pl. 12, figs. 8, 9, 42.

Waverly Group: Licking County, Ohio.

1888. Pterinopecten cariniferus. Herrick, Bull. Den. Univ., vol. 4, p. 33, pl. 5, fig. 12.

Waverly Group: Ashland County and Lodi, Ohio.

1889. Pterinopecten cariniferus. Herrick, Am. Geol., vol. 3, pl. 3, fig. 12.

1895. Pterinopecten cariniferus. Herrick, Geol. Surv. Ohio, vol. 7, pl. 22, fig. 16; pl. 24, fig. 24.

Cuyahoga Shale: Moot's Run, Ohio.

### Pterinopecten hoosacensis Walcott.

1884. Pterinopecten Hoosacensis. Walcott, Pal. Eureka Dist., p. 232, pl. 8, fig. 9. Lower Carboniferous: Eureka District, Nevada.

### Pterinopecten lætus Hall.

1884. Pterinopecten lætus. Hall, Pal. N. Y., vol. 5, pt. 1, p. 63, pl. 1, fig. 13.

Marcellus Shale: Bloomfield, Ontario County, New York.

1888. Pterinopecten lætus. Herrick, Bull. Den. Univ., vol. 4, p. 114, pl. 5, fig. 13.
Waverly Group: Moot's Run, Licking County, Ohio.

1889. Pterinopecten lætus. Herrick, Am. Geol., vol. 3, pl. 3, fig. 13.

1895. Pterinopecten laetus. Herrick, Geol. Surv. Ohio, vol. 7, pl. 22, fig. 15. Cuyahoga Shale: Moot's Run, Ohio.

# Pterinopecten sedaliensis Miller.

1891. Pterinopecten sedaliensis. Miller, Adv. Sheets 17th Rep. Geol. Surv. Ind., p. 93, pl. 20, figs. 8, 9.

Chouteau L. S.: Sedalia, Missouri.

1892. Pterinopecten sedaliensis. Miller, 17th Rep. Geol. Surv. Ind., p. 703, pl. 20, figs. 8, 9.

Chouteau L. S.: Sedalia, Missouri.

### Pterinopecten spio Walcott.

1884. Pterinopecten Spio. Walcott, Pal. Eureka Dist., p. 233, pl. 8, figs. 1, 1a. Lower Carboniferous: Eureka District, Nevada.

## Pterinopecten (species undetermined).

- 1888. Pterinopecten sp. Herrick, Bull. Den. Univ., vol. 4, pl. 9, fig. 12. Bedford Shale: Central College, Ohio.
- 1889. Pterinopecten sp. Herrick, Am. Geol., vol. 3, pl. 4, fig. 12. Bedford Shale: Ohio.
- 1895. Pterinopecten sp. Herrick, Geol. Surv. Ohio, vol. 7, pl. 20, fig. 12.
  Shale above Berea Grit: Ohio.

## PTERONITES McCoy, 1884.

# Pteronites gayensis Dawson.

1868. Pteronites Gayensis. Dawson, Acad. Geol., p. 301, fig. 101. Carboniferous L. S.: Gay's River, Nova Scotia.

#### Pteronites gavensis var. ornatus Dawson.

1883. Pteronites Gayensis (var. ornatus). Dawson, Rep. Peter Redpath Mus., No. 2, p. 14.

Lower Carboniferous L. S.: Port-au-Port, Newfoundland.

### Pteronites hopkinsi Weller.

1897. Pteronites hopkinsi. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 261, pl. 13, fig. 10.

Batesville S. S.: Batesville, Arkansas.

#### Pteronites lævis Weller.

1897. Pteronites lavis. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 262, pl. 19, figs. 11, 12.

Batesville S. S.: Batesville, Arkansas.

#### Pteronites obliques Herrick.

1888. Pteronites (Leptodesma)? obliques. Herrick, Bull. Den. Univ., vol. 3, p. 58 pl. 4, fig. 20; pl. 7, fig. 7.

Waverly Group: Licking County, Ohio.

#### Pteronites spergenensis Whitfield.

1882. Pteronites Spergenensis. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 56, pl. 7, fig. 1.

St. Louis Group: Spergen Hill, Indiana.

1883. Pteronites Spergenensis. Hall, 12th Rep. Geol. Surv. Ind., pl. 30, fig. 1. St. Louis Group: Spergen Hill, Indiana.

# PTEROTOCRINUS Lyon and Casseday, 1860.

### Pterotocrinus acutus Wetherby.

1879. Pterotocrinus acutus. Wetherby, Jour. Cinn. Soc. Nat. Hist., vol. 2, p. 134, pl. 11, fig. 2.

Kaskaskia Group: Pulaski County, Kentucky.

1879. Pterotocrinus spatulatus. Wetherby, Jour. Cinn. Soc. Nat. Hist., vol. 2, p. 187, pl. 11, fig. 3.

Kaskaskia Group: Pulaski County, Kentucky.

1897. Pterotocrinus acutus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 799, pl. 79, figs. 3a-g.

Kaskaskia Group: Sloan's Valley, Pulaski County, Kentucky.

# Pterotocrinus acutus var. bifurcatus Wetherby.

1879. Pterotocrinus bifurcatus. Wetherby, Jour. Cinn. Soc. Nat. Hist., vol. 2, p. 136, pl. 11, fig. 1.

Kaskaskia Group: Pulaski County, Kentucky.

1897. Pterotocrinus acutus var. bifurcatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 801, pl. 79, figs. 9a, b.

Kaskaskia Group: Sloan's Valley, Pulaski County, Kentucky.

## Pterotocrinus bifurcatus. See Pterotocrinus acutus var. bifurcatus.

### Pterotocrinus capitalis Lyon.

- 1875. Asterocrinus capitalis. Lyon, Geol. Rep. Ky., vol. 3, p. 472, pl. 3, figs. 1-1k.

  Lower calcareous beds of Millstone Grit: Crittenden County, Kentucky.
- 1897. Pterotocrinus capitalis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 794, pl. 79, figs. 6a, b.

Kaskaskia Group: Crittenden County, Kentucky.

## Pterotocrinus chesterensis Meek and Worthen.

- 1860. Dichocrinus (Pterotocrinus) Chesterensis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 383.
  - Chester L. S.: Chester, Illinois.
- 1866. Pterotocrinus chesterensis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 292, pl. 23, figs. 1a-c.

Chester Group: Hardin County, Illinois.

- 1894. Pterotocrinus chesterensis. Keyes, Mo. Geol. Surv., vol. 4, p. 206. Kaskaskia L. S.: Chester, Illinois.
- 1897. Pterotocrinus chesterensis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 802, pl. 79, figs. 5a, b.
  Kaskaskia Group: Hardin County, Illinois.

### Pterotocrinus coronarius Lyon.

- 1857. Asterocrinus (?) coronarius. Lyon, Geol. Rep. Ky., vol. 3, p. 476, pl. 1, figs. 1, 1a.
  - Lower calcareous beds of Millstone Grit: Crittenden County, Kentucky.
- 1897. Pterotocrinus coronarius. Wachsmuth and Springer, N. Am. Crin. Cam., p. 795, pl. 79, figs. 7a, b.
  Kaskaskia Group: Crittenden County, Kentucky.

#### Pterotocrinus crassus Meek and Worthen.

1860. Dichocrinus (Pterotocrinus) crassus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 382.

Chester L. S.: Hardin County, Illinois.

1866. Pterotocrinus crassus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 290, pl. 23, figs. 2a, b.

Chester Group: Hardin County, Illinois.

1897. Pterotocrinus crassus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 801, pl. 79, fig. 8.

Kaskaskia Group: Hardin County, Illinois.

### Pterotocrinus depressus Lyon and Casseday.

- 1860. Pterotocrinus depressus. Lyon and Casseday, Am. Jour. Sci. (2), vol. 29, p. 68.
  - Millstone Grit: Grayson Springs, Kentucky, and Dr. Baker's furnace, Edmonson County, Kentucky.
- 1873. Pterotocrinus depressus? Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 599, pl. 21, fig. 13.
  Chester Group: Kaskaskia, Illinois.
- 1897. Pterotocrinus depressus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 796, pl. 79, figs. 2a-e.
  - Kaskaskia Group: Grayson, Edmonson, and Pulaski counties, Kentucky.

### Bull. 153-33

### Pterotocrinus protuberans Hall.

1858. Dichocrinus protuberans. Hall, Geol. Iowa, vol. 1, pt. 2, p. 689, pl. 25, fig. 7. Kaskaskia L. S.: Chester, Illinois.

### Pterotocrinus pyramidalis Lyon and Casseday.

1860. Pterotocrinus pyramidalis. Lyon and Casseday, Am. Jour. Sci. (2), vol. 29, p. 69.

Third L. S. of Millstone Grit Series: Edmonson, Grayson, and Breckinridge counties, Kentucky.

1897. Pterotocrinus pyramidalis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 798, pl. 79, figs. 4a, b.

Kaskaskia Group: Edmonson, Grayson, and Breckinridge counties, Kentucky: Morton County. Indiana.

### Pterotocrinus rugosus Lyon and Casseday.

1860. Pterotocrinus rugosus. Lyon and Casseday, Am. Jour. Sci. (2), vol. 29, p. 71. Lowest Siliceous mud bed: Falls of Rough Creek, Breckinridge County, Kentucky.

Pterotocrinus spatulatus. See Pterotocrinus acutus.

## Pterotocrinus wetherbyi Miller and Gurley.

1895. Pterotocrinus wetherbyi. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 44, pl. 4, figs. 6-9.

Kaskaskia Group: Pulaski County, Kentucky.

## PTILODICTYA Lonsdale, 1839.

## Ptilodictya carbonaria Meek. See Cystodictya carbonaria.

# Ptilodictya dictyota Meek.

1873. Ptilodictya (Stictopora?) dictyota. Meek, U. S. Geol. Surv. Mont., Idaho, Wyo., and Utah, p. 465.

Carboniferous: Outlet of Mystic Lake, Montana.

Ptilodictya sereata Meek. See Prismopora sereata.

Ptilodictya triangulata. See Prismopora triangulata.

### PTILOPORA McCoy, 1844.

# Ptilopora acuta Ulrich.

1890. Ptilopora acuta. Ulrich, Geol. Surv. Ill., vol. 8, p. 622, pl. 65, figs. 4, 4a. Keokuk Group: Bentonsport and Keokuk, Iowa.

Burlington Group: Burlington, Iowa.

1894. Ptilopora acuta. Keyes, Mo. Geol. Surv., vol. 5, p. 31. Keokuk L. S.: Keokuk, Iowa.

### Ptilopora cylindracea Ulrich.

1890. Ptilopora cylindracea. Ulrich, Geol. Surv. Ill., vol. 8, p. 623, pl. 66, figs. 2-2b. Keokuk Group: King's Mountain, Kentucky; Bentonsport, Iowa.

1894. Ptilopora cylindracea. Keyes, Mo. Geol. Surv., vol. 5, p. 32. Keokuk L. S.: Bentonsport, Iowa.

### Ptilopora paupera Ulrich.

1888. Ptilopora paupera. Ulrich, Bull. Den. Univ., vol. 4, p. 74. Waverly Group: Lodi, Ohio.

1890. Ptilopora paupera. Ulrich, Geol. Surv. Ill., vol. 8, p. 624, pl. 66, fig. 10. Keokuk Group: King's Mountain, Kentucky.

### Ptilopora prouti Hall.

1858. Ptilopora prouti. Hall, Geol. Iowa, vol. 1, pt. 2, p. 653, pl. 22, figs. 6a-c, 7. Warsaw L. S.: Warsaw, Illinois.

1890. Ptilopora prouti. Ulrich, Geol. Surv. Ill., vol. 8, p. 625, pl. 65, figs. 3-3c.
Warsaw Beds: Monroe County and Warsaw, Illinois; near New Providence, Indiana.

St. Louis Group: Barrett's Station, Missouri.

1894. Ptilopora prouti. Keyes, Mo. Geol. Surv., vol. 5, p. 32. St. Louis L. S.: Barrett's Station, Missouri.

#### Ptilopora valida Ulrich.

1890. Ptilopora valida. Ulrich, Geol. Surv. Ill., vol. 8, p. 623, pl. 65, figs. 5-5c; pl. 66, figs. 1-1b.

Keokuk Group: Bentonsport and Keokuk, Iowa; Jersey County, Illinois. 1894. *Ptilopora valida*. Keyes, Mo. Geol. Surv., vol. 5, p. 32. Keokuk L. S.: Bentonsport, Iowa.

# PTYCHOPTERIA Hall, 1884.

# Ptychopteria protoforme Walcott.

1884. Ptychopteria protoforme. Walcott, Pal. Eureka Dist., p. 235, pl. 8, fig. 5. Lower Carboniferous: Eureka District, Nevada.

# PTYCHOSPIRA Hall, 1893.

## Ptychospira plicata Miller.

1892. Retzia plicata. Miller, Adv. Sheets 18th Rep. Geol. Surv. Ind., p. 62, pl. 9, figs. 29-31.

Chouteau L. S.: Sedalia, Missouri.

1894. Retzia plicata. Miller, 18th Rep. Geol. Surv. Ind., p. 316, pl. 9, figs. 29-31. Chouteau L. S.: Sedalia, Missouri.

#### Ptychospira sexplicata White and Whitfield.

1862. Retzia sexplicata. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 294.

Chemung Group: Burlington, Iowa.

1894. Ptychospira sexplicata. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 36, figs. 22, 23.

Kinderhook Group: Illinois.

1895. Ptychospira (cf.) sexplicata. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 50, figs. 13, 14.
 Burlington L. S.: Burlington, Iowa.

1895. Ptychospira sex-plicata. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 83,

Kinderhook Group: Burlington, Iowa.

### PTYCHOSTYLUS Gurley, 1884.

#### Ptychostylus heterocostalis Gurley.

1884. Ptychostylus heterocostalis. Gurley, New Carb. Foss., Bull. No. 2, p. 5. Upper Coal Measures: Kansas City, Missouri.

### Ptychostylus subtumidus Gurley.

1884. Ptychostylus subtumidus. Gurley, New Carb. Foss., Bull. No. 2, p. 6. Kinderhook Shales: Pike County, Missouri.

# (PUGIUNCULUS Barrande, 1847.)

### Pugiunculus aculeatus Hall. See Hyolithes aculeatus.

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## PUGNAX Hall, 1893.

### Pugnax dawsonianus Davidson.

1863. Rhynchonella Dawsoniana. Davidson, Quart. Jour. Geol. Soc. Lond., vol. 19, p. 172, pl. 9, figs. 13, 14.

Lower Carboniferous L. S.: Lennox Passage, Nova Scotia.

1868. Rhynchonella Dawsoniana. Dawson, Acad. Geol., p. 294, figs. 93a, b. Carboniferous L. S.: Lennox Passage, Nova Scotia.

1895. Pugnax (?) Dawsonianus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 62, figs. 30-33.

Carboniferous L. S.: Windsor, Nova Scotia.

# Pugnax eatoniæformis. See Pugnax rockymontana.

Pugnax explanatus. See Camarophoria explanata.

## Pugnax globulina Phillips.

1863. Camarophoria? globulina? Davidson, Quart. Jour. Geol. Soc. Lond., vol. 19, p. 171, pl. 9, figs. 11, 12.
Lower Carboniferous L. S.: DeBert River, Nova Scotia.

1868. Camarophoria (†) globulina (†). Dawson, Acad. Geol., p. 293, figs. 92a, b. Carboniferous L. S.: DeBert River, Nova Scotia.

See also Pugnaz uta.

## Pugnax greenianus Ulrich.

1886. Bhynchonella greeniana. Ulrich, Cont. to Am. Pal., vol. 1, No. 1, p. 26, pl. 3, figs. 1-1d.

Knobstone Group: 3 miles west of New Albany, Indiana.

1895. Pugnax Greenianus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 60, figs. 36–38.
Keokuk Group: New Albany, Indiana.

# Pugnax grosvenori Hall.

1856. Rhynchonella Grosvenori. Hall, Trans. Albany Inst., vol. 4, p. 10.
St. Louis L. S.: Spergen Hill and Bloomington, Indiana; Alton, Illinois.

1882. Bhynchonella Grosvenori. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 53, pl. 6, figs. 31-34.

St. Louis Group: Spergen Hill and Bloomington, Indiana; Alton, Illinois. 1883. Rhynchonella grosvenori. Hall, 12th Rep. Geol. Surv. Ind., p. 331, pl. 29,

figs. 31-34.

St. Louis Group: Spergen Hill and Bloomington, Indiana; Alton, Illinois.

1895. Pugnax Grosvenori. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 60, figs. 13-17.

St. Louis Group: Spergen Hill, Indiana.

### Pugnax missouriensis Shumard.

1855. Rhynchonella Missouriensis. Shumard, Geol. Rep. Mo., p. 204, pl. C, fig. 5a. Chouteau L. S.: Vandever's Falls, Cooper County, and Providence, Boone County, Missouri.

1866. Bhynchonella missouriensis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 153, pl. 14, figs. 4a, b.

Goniatite Bed: Rockford, Indiana.

Kinderhook Group: Chouteau Springs, Missouri.

1894. Rhynchonella missouriensis. Keyes, Mo. Geol. Surv., vol. 5, p. 100. Chouteau L. S.: Vandever Falls and Providence, Missouri.

1895. Pugnax Missouriensis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 60, figs. 33, 34; pl. 62, figs. 44, 45.

Chouteau L. S.: Pike County, Missouri.

Yellow Sandstone: Burlington, Iowa.

### Pugnax mutatus Hall.

- 1856. Rhynchonella mutata. Hall, Trans. Albany Inst., vol. 4, p. 10. St. Louis L. S.: Alton, Illinois.
- 1858. Rhynohonolla mutata. Hall, Geol. Iowa., vol. 1, pt. 2, p. 658, pl. 23, figs. 2a, b. Warsaw L. S.: Near Alton, Illinois.
- 1882. Rhynchonella mutata. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 52, pl. 6, figs. 43-45.
  - St. Louis Group: Alton, Illinois.

Keokuk L. S.: Warsaw, Illinois.

- 1883. Rhynchonella mutata. Hall, 12th Rep. Geol. Surv. Ind., p. 332, pl. 29, figs. 43-45.
- St. Louis Group: Spergen Hill and Lanesville, Indiana. 1894. Rhynchonella mutata. Keyes, Mo. Geol. Surv., vol. 5, p. 103.

Keokuk L. S.: Boonville, Missouri.

- 1895. Pugnax mutatus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 60, figs. 18-22. St. Louis Group: Spergen Hill, Indiana.
- 1897. Rhynchonella mutata? Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 257, pl. 18, figs. 13-15.
  Batesville S. S.: Batesville, Arkansas.

### Pugnax ottumwa White.

- 1862. Rhynchonella Ottumwa. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 23. St. Louis L. S.: Ottumwa and near Oskaloosa, Iowa.
- 1880. Rhynchonella ottumwa. White, Cont. to Inv. Pal., No. 8, p. 165, pl. 41, figs. 5a-c.
  - St. Louis Group: Ottumwa, Iowa, and various localities in Iowa, Illinois, and Missouri.
- 1894. Rhynchonella ottumwa. Keyes, Mo. Geol. Surv., vol. 5, p. 103. St. Louis L. S.: St. Francisville, Missouri.
- 1895. Pugnax Ottumwa. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 60, figs. 23-26. St. Louis Group: Pella, Iowa.

# Pugnax pugnus Martin.

- 1863. Rhynchonella pugnus? Davidson, Quart. Jour. Geol. Soc. Lond., vol. 19, p. 173.
  - Lower Carboniferous L. S.: Windsor and East River, Nova Scotia.
- 1868. Rhynchonella pugnus (†). Dawson Acad. Geol., p. 295.
  Carboniferous L. S.: Windsor and East River, Nova Scotia.

### Pugnax rockymontana Marcou.

- 1858. Torebratula rocky-montana. Marcou, Geol. N. A., p. 50, pl. 6, figs. 13-13c. Mountain L. S.: Pecos Village, New Mexico.
- 1860. Rhynchonella eatoniaformis. McChesney, Desc. New Pal. Foss., p. 49. Coal Measures: Graysville, Illinois; Big Creek L. S., Indiana.
- 1877. Rhynchonella Rockymontana. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 131, pl. 9, figs. 1a-d.
  Carboniferous: Near Beckwith Spring, Cedar Range, Utah.
- 1895. Pugnax eatoniiformis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 60, figs. 11, 12.
  Coal Measures: Graysville, Illinois.

#### Pugnax striaticostata Meek and Worthen.

- 1855. Rhynchonella Missouriensis. Shumard, Geol. Rep. Mo., p. 204, pl. C, figs. 5b, c. (Not fig. 5a.)
  - Chouteau L. S.: Vandever's Falls, Cooper County, and Providence, Boone County, Missouri.
- 1868. Rhynchonella striatocostata. Meek and Worthen, Geol. Surv. III., vol. 3, p. 452.

## Pugnax striaticostata Meek and Worthen-Continued.

- 1868. Rhynchonella Missouriensis. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 450, pl. 14, figs. 7a-d.
  - Kinderhook Group: Kinderhook, Pike County, Illinois.
- 1870. Rhynchonella Missourionsis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 253. Waverly Group: Sciotoville, Ohio.

### Pugnax swalloviana Shumard.

- 1859. Camerophoria swalloviana. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 394, pl. 11, figs. 1a-e.
- White Permian L. S.: Guadalupe Mountains.

  1895. Pugnax swalloviana. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 60, figs. 27-32.

Upper Coal Measures: Manhattan, Kansas.

### Pugnax uta Marcou.

- 1852. Terebratula pugnus. Roemer, Kreid. von Texas, p. 89.
  - Carboniferous: San Saba Valley, Texas.
- 1858. Terebratula uta. Marcou, Geol. N. A., p. 51, pl. 6, figs. 12-12c. Mountain L. S.: Near Salt Lake City, Utah.
- 1858. Rhynconella (Camerophoria) Osagensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 219.
  Upper Coal Measures: Missouri and Kansas.
- 1859. Rhynchonella uta. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 27. Upper Coal Measures: Manhattan, Kansas.
- 1861. Rhynchonella uta. Newberry, Ives's Colo. Expl. Exped., p. 128. Upper Carboniferous: Near mouth of Little Colorado River.
- 1866. Camarophoria globulina. Geinitz, Carb. und Dyas in Nebr., p. 38, taf. 3, fig. 5.

Bennett's Mill and Nebraska City, Nebraska.

- 1872. Rhynchonella Osagensis. Meek, U. S. Geol. Surv. Nebr., p. 179, pl. 1, figs. 9a, b; pl. 6, figs. 2a, b.
  - Upper Coal Measures: Nebraska City, Nebraska.

Coal Measures: Iowa; Missouri; Kansas.

Upper, Middle, and Lower Coal Measures: Illinois.

- 1873. Bhynchonella Osagensis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 571, pl. 26, fig. 22.
  - Coal Measures: Danville, Illinois, and Fulton County, Illinois.
- 1877. Rhynchonella Uta. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 128, pl. 9, figs. 2a-c.
  - Carboniferous: North fork of Lewiston Canyon, Oquirrh range, and at Meadow Creek, south of Fillmore, Utah.
- 1884. Rhynchonella uta. White, 13th Rep. Geol. Surv. Ind., p. 132, pl. 25, fig. 6. Coal Measures: Indiana.
- 1891. Rhynchonella uta. Keyes, Proc. Acad. Nat. Sci. Phil., p. 247. Lower Coal Measures: Des Moines, Iowa.
- 1894. Rhynchonella uta. Keyes, Mo. Geol. Surv., vol. 5, p. 103, pl. 41, fig. 7. Upper Coal Measures: Kansas City and Lexington, Missouri.
- 1894. Pugnaz uta. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 44, figs. 17-19.
  Coal Measures: Manhattan, Kansas.
- 1895. Pugnax Uta. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 60, figs. 39-42.
  Coal Measures: Manhattan, Kansas.
- 1897. Rhynchonella uta. Smith, Proc. Am. Phil. Soc., vol. 35, p. 30.
  Upper Coal Measures: Sebastian County, Arkansas, and Poteau Mountain,
  Indian Territory.

# Pugnax (species undetermined).

1895. Pugnax sp. f Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 60, figs. 46-48.

Coal Measures: Graham County, Texas.

# PUPA Humphrey, 1797.

## Pupa bigsbyi Dawson.

1880. Pupa Bigebii. Dawson, Am. Jour. Sci, (3), vol. 20, p. 410, figs. 5, 6.
Coal Measures: South Joggins, Nova Scotia.

1883. Pupa bigsbyi. White, 3d Ann. Rep. U. S. Geol. Surv., p. 456, pl. 2, figs. 9, 10. Pupa vermilionensis Bradley.

1872. Pupa Vermilionensis. Bradley, Am. Jour. Sci. (3), vol. 4, p. 87, fig. 1.
Coal Measures: Petty's Ford of the Little Vermilion River, below

Georgetown, Vermilion County, Illinois.

1880. Pupa Vermilionensis. Dawson, Am. Jour. Sci. (3), vol. 20, p. 410, figs. 8, 9, 14c.

Coal Measures: Pelly's Fort, Vermilion River, Illinois.

1883. Pupa vermilionensis. White, 3d Am. Rep. U. S. Geol. Surv., p. 456, pl. 2, figs. 13, 14.

#### Pupa vetusta Dawson.

1860. Pupa vetusta. Dawson, Quart. Jour. Geol. Soc. Lond., vol. 16, p. 270, figs. 1-3.

Coal Formation: South Joggins, Nova Scotia.

1868. Pupa Vetusta. Dawson, Acad. Geol., p. 383, figs. 149a-d.

Coal Measures: Joggins, Nova Scotia.

1880. Pupa vetusta. Dawson, Am. Jour. Sci. (3) vol. 20, p. 405, figs. 1-4. Coal Measures: Joggins, Nova Scotia.

1883. Pupa retusta. White. 3d Ann. Rep., U. S. Geol. Surv., p. 456, pl. 2, figs. 1, 2. Pupa vetusta var. tenuistriata Dawson.

1880. Pupa vetusta var. tenuistriata. Dawson, Am. Jour. Sci. (3), vol. 20, p. 406. Coal Measures: South Joggins, Nova Scotia.

### RACHURA Scudder, 1878.

### Rachura venosa Scudder.

1878. Rachura venosa. Scudder, Proc. Bost. Soc. Nat. Hist., vol. 19, p. 299, pl. 9, figs. 3-3a.

Coal Measures: Vermilion County, Illinois.

1889. Rachura renosa. Packard, Proc. Bost. Soc. Nat. Hist., vol. 24, p. 212. Coal Measures: Danville, Illinois.

### RAMIPORA Toula, 1875.

### Ramipora hochstetteri Toula.

1875. Ramipora Hochstetteri. Toula, Neu. Jahrb., Jahrg. 1875, p. 230, taf. 10, figs. 1a, b.

Permo Carboniferous: Spitzbergen.

1878. Ramipora Hochstetteri. Etheridge, Quart. Jour. Geol. Soc. Lond., vol. 34, p. 627.

Carboniferous: Cape Joseph Henry, latitude 82° 50'.

## REMELECERAS Hyatt, 1894.

### Remeleceras clarkense Miller and Gurley.

1897. Remeleceras clarkense. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 49, pl. 4, figs. 1-3.

Knobstone Group: Sampson Springs, Clarke County, Indiana.

## (RETEPORA Lamark, 1801.)

# Retepora archimedes Owen. See Archimedes archimedes.

# RETICULARIA McCoy, 1844.

#### Reticularia clara Swallow.

1863. Spirifer clarus. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 86. Archimedes L. S.: Ste. Genevieve County, Missouri.

### Reticularia cooperensis Swallow.

- 1860. Spirifer Cooperensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 643. Chouteau L. S.: Cooper County, Missouri.
- 1860. Spirifer semiplicata. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 111. Goniatite L. S.: Rockford, Indiana.
- 1862. Spirifer kirtus. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 293.
- Chemung Group: Burlington, Iowa. 1865. Spirifera kirta? Winchell, Proc. Acad. Nat. Sci. Phil., p. 119.
- Bed No. 6: Burlington, Iowa.

  1866. Spirifer cooperensis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 155, pl. 14, figs. 5a, b.

  Kinderhook Group: Chouteau Springs, Missouri.
- 1869. Spirifera kirta? Winchell, Safford's Geol. of Tenn., p. 442.
  Shale, just above Black Shale: Hickman and Maury counties, Tennessee.
- 1870. Spirifera kirta? Winchell, Proc. Am. Phil. Soc., vol. 11, p. 251. Waverly Group: Tennessee.
- 1888. Spirifer? kirtus? Herrick, Bull. Den. Univ., vol. 3, p. 47, pl. 3, fig. 2. Waverly Group: Licking County, Ohio.
- 1888. Spirifer kirtus. Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 20. Waverly Group: Cuyahoga Falls, Ohio.
- 1894. Spirifera cooperensis. Keyes, Mo. Geol. Surv., vol. 5, p. 78. Chouteau L. S.: Chouteau Springs, Missouri.
- 1895. Spirifer hirtus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 38, fig. 14. Kinderhook Group: Illinois.
- 1895. Spirifer (cf.) kirius. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 84, figs. 36, 37.
  Waverly Group: Richfield, Ohio.

#### Reticularia guadalupensis Shumard.

1859. Spirifer Guadalupensis: Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 391. White Permian L. S.: Guadalupe Mountains.

### Reticularia lineatoides Swallow.

- 1860. Spirifer lineatoides. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 645. Encrinital L. S.: Missouri.
- 1894. Spirifera lineatoides. Keyes, Mo. Geol. Surv., vol. 5, p. 80, pl. 40, fig. 6. Burlington L. S.: Hannibal, Missouri.

# Reticularia perplexa McChesney.

- 1856. Spirifer lineatus. Hall, Pac. R. R. Rep., vol. 3, p. 101, pl. 2 figs. 6-8. (Not S. lineatus Martin, 1809.)
  - Carboniferous: Pecos Village, New Mexico.
- 1858. Spirifer lineatus. Marcou, Geol. N. A., p. 50, pl. 7, figs. 5-5c. Mountain L. S.: Pecos Village and Tigeras, New Mexico.
- 1859. Spirifer lineatus. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 28. Upper Coal Measures: Leavenworth, Kansas.
- 1860. Spirifer perplexa. McChesney, Desc. New Pal. Foss., p. 43.

  Upper Coal Measures: Almost every part of the country where rocks of that age occur.

### Reticularia perplexa McChesney—Continued.

- 1861. Spirifer lineatus. Newberry, Ives's Colo. Expl. Exped., p. 127.
  Upper Carboniferous: Cherty L. S. west of Little Colorado River; vicinity of Santa Fe. New Mexico.
- 1864. Spirifer lineatus. Meek, Pal. Cal., vol. 1, p. 13, pl. 2, figs. 6-6d. Carboniferous: Base's Ranch, Shasta County, California.
- 1866. Spirifer lineatus. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 408.
  Coal Measures: Mississippi Valley.
- 1866. Spirifer lineatus var. perplexa. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 408.
  Coal Measures: Mississippi Valley.
- 1866. Spirifer lineatus var. striato-lineatus. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 408.
  - Upper and Middle Coal Measures: Missouri.
- 1872. Spirifer lineatus? Meek, U. S. Geol. Surv. Nebr., pl. 2, figs. 3a, b. Upper Coal Measures: Platte River, Nebraska.
- 1874. Spirifera (Martinia) perplexa. Derby, Bull. Cornell Univ. (Sci.), vol. 1, No. 2, p. 16, pl. 3, figs. 27, 39, 40, 45, 50; pl. 8, fig. 13.
   Coal Measures Bomjardim and Itaituba, Brazil, and River Pichis, Peru.
- 1882. Spirifer (Martinia) lineatus. White, 11th Rep. Geol. Surv. Ind., p. 372, pl. 42, figs. 4-6.
  Coal Measures: Eugene, Indiana.
- 1884. Spirifer (Martinia) lineatus. White, 13th Rep. Geol. Surv. Ind., p. 133, pl. 27, figs. 4-6.
  - Coal Measures: Fountain, Park, Vermilion, Vigo, Sullivan, Gibson, Pike, Knox, Posey, Vanderburg, and Warrick counties, Indiana.
- 1886. Spirifer lineatus? Heilprin, 2d Geol. Surv. Penn., Ann. Rep. for 1885, p. 453.
  Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.
- 1886. Spirifer lineatus? Heilprin, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 269.
  - Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.
- 1887. Spirifera (Martinia) lineata? Herrick, Bull. Den. Univ., vol. 2, p. 46, pl. 1, figs. 13a-c.
  - Coal Measures: Flint Ridge, Ohio.
- 1888. Spirifera lineata. Keyes, Proc. Acad. Nat. Sci. Phil., p. 230. Lower Coal Measures: Des Moines, Iowa.
- 1891. Spirifer (Martinia) lineata. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 603, pl. 16, figs. 3-5.
  Coal Measures: Hocking County, Ohio.
- 1894. Spirifera perplexa. Keyes, Mo. Geol. Surv., vol. 5, p. 84. Upper Coal Measures: Kansas City, Missouri.
- 1895. Spirifera (Martinia) lineata. Whitfield, Geol. Surv. Ohio, vol. 7, p. 488, pl. 12, figs. 3-5.
  Coal Measures: Hocking County, Ohio.
- 1895. Spirifer lineatus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 38, figs. 2, 4, 7, 8. Coal Measures: Iowa.

#### Reticularia pseudolineata Hall.

- 1858. Spirifer pseudolineatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 645, pl. 20, fig. 4. Keokuk L. S.: Keokuk, Iowa; Warsaw, Illinois.
- 1883. Spirifera pseudolineata. Hall, Rep. N. Y. State Geol. for 1882, pl. (36) 61, figs. 28-30.
- 1891. Spirifer pseudolineatus? Herrick, Bull. Geol. Soc. Am., vol. 2, p. 45, pl. 1, fig. 18.
  - Upper Waverly Group: Scioto County, Ohio.

Keokuk L. S.: Keokuk, Iowa.

### Reticularia pseudolineata Hall-Continued.

1894. Spirifer pseudolineatus. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 25, fig. 15.

Keokuk L. S.: Keokuk, Iowa.

1894. Spirifera pecudolineata. Keyes, Mo. Geol. Surv., vol. 5, p. 82. Keokuk L. S.: St. Francisville, Missouri.

1895. Spirifer pseudolineatus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 36, figs. 28-30.

Keokuk L. S.: Keokuk, Iowa.

# Reticularia setigera Hall.

1858. Spirifer setigerus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 705, pl. 27, figs. 4a, b. Kaskaskia L. S: Kaskaskia and Chester, Illinois.

1877. Spirifera setigera. Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 270, pl. 5, figs. 17, 18.

Lower Carboniferous L. S.: North of Snowstorm Hill, Dry Canyon, Oquirrh Mountains, Utah.

1883. Spirifora setigera. Hall, Rep. N. Y. State Geol. for 1882, pl. (36) 61, figs. 26, 27.
Chester L. S.: Chester, Illinois.

1894. Spirifer setigerus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 36, figs. 26, 27. Chester L. S.: Chester, Illinois.

1894. Spirifera setigera. Keyes, Mo. Geol. Surv., vol. 5, p. 83. Kaskaskia, L. S.: Ste. Mary, Missouri.

#### Reticularia temeraria Miller.

1881. Spirifera temeraria. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 4, p. 314, pl. 7, figs. 9-9b.
Subcarboniferous: Lake Valley mining district, New Mexico.

# Reticularia tenuispinata Herrick.

1888. Spirifer (Martinia) tonuispinatus. Herrick, Bull. Den. Univ., vol. 4, p. 27, pl. 2, fig. 4.
Waverly Group: Ohio.

1895. Spirifer tenuispinatus. Herrick, Geol. Surv. Ohio, vol. 7, pl. 15, fig. 4. Cuyahoga Shales: Moot's Run, Licking County, Ohio.

### Reticularia translata Swallow.

1863. Spirifer translatus. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 85.
Archimedes L. S.: Near Chester, Illinois, and Ste. Mary's, Missouri.

#### RETZIA King, 1850.

#### Retzia altirostris. See Eumetria altirostris.

#### Retzia circularis Miller.

1892. Retsia circularis. Miller, Adv. Sheets 18th Rep. Geol. Surv. Ind., p. 62, pl. 9, figs. 32-34.

Chouteau L. S.: Sedalia, Missouri.

1894. Retzia circularis. Miller, 18th Rep. Geol. Surv. Ind., p. 316, pl. 9, figs. 32-34. Chouteau L. S.: Sedalia, Missouri.

#### Retzia compressa. See Hustedia mormoni.

Retzia meekana. See Hustedia meekana.

Retzia mormoni. See Hustedia mormoni.

Retzia osagensis. See Acambona osagensis.

Retzia papillata. See Hustedia papillata.

Retzia plicata. See Ptychospira plicata.

Retzia popeana Swallow.

1858. Retsia (1) Popeana. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 654.

Retzia punctilifera. See Hustedia mormoni.

Retzia radialis. Şee Hustedia mormoni.

Retzia sexplicata. See Ptychospira sexplicata.

Retzia triangularis. See Hustedia triangularis.

Retzia subglobosa. See Hustedia mormoni.

Retzia vera. See Eumetria marcyi.

Retzia vera var. costata. See Eumetria marcyi.

Retzia verneuilana. See Eumetria marcyi.

Retzia woosteri. See Eumetria woosteri.

Retzia (species undetermined).

1888. Retsia sp. Herrick, Bull. Den. Univ., vol. 3, pl. 2, figs. 12, 13. Waverly Group: Licking County, Ohio.

### RHAPHIDIOPSIS Scudder, 1893.

## Rhaphidiopsis diversipenna Scudder.

1893. Rhaphidiopsis diversipenna. Scudder, Bull. U. S. Geol. Surv., No. 101, p. 11, pl. 1, figs. c, d.

Carboniferous: Lockonosett Mine in Cranston, Rhode Island.

# RHIPIDOMELLA Œblert, 1891.

# Rhipidomella burlingtonensis Hall.

1858. Orthis michelini var. burlingtonensis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 596, pl. 12, figs. 4a, b.

Burlington L. S.: Burlington, Iowa; Quincy, Illinois; Hannibal, Missouri. 1874. Orthis Michelini var. Burlingtonensis? White, Prelim, Rep. Inv. Foss., p. 17.

Subcarboniferous: Below Ophir City, Utah.

1892. Orthis Burlingtonensis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 6A,

Burlington L. S.: Sageville, Illinois.

1892. Orthis (Rhipidomella) Burlingtonensis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 20, figs. 5, 6.

Burlington L. S. (Chert): Pike County, Missouri.

1894. Orthis burlingtonensis. Keyes, Mo. Geol. Surv., vol. 5, p. 63, pl. 38, fig. 7. Kinderhook Group: Louisiana and Hannibal, Missouri; Burlington, Iowa. Burlington L. S.: Sedalia, Ash Grove, Springfield, Hannibal, Louisiana, and Ste. Genevieve, Missouri.

#### Rhipidomella clarkensis Swallow.

1863. Orthis Clarksensis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 81. Keokuk L. S.: Iowa and Missouri.

### Rhipidomella dalyana Miller.

1881. Orthis dalyana. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 4, p. 313, pl. 7, figs. 8-8b.

Subcarboniferous: Lake Valley Mining District, New Mexico.

### Rhipidomella dubia Hall.

1856. Orthis dubia. Hall, Trans. Albany Inst., vol. 4, p. 12.

St. Louis L. S.: Spergen Hill and Bloomington, Indiana; Alton, Illinois.

## Rhipidomella dubia Hall—Continued.

- 1863. Orthis Cooperensis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 82.
  Warsaw L. S.: Cooper County and Barrett's Station, St. Louis County, Missonri.
- 1882. Orthis dubia. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 45, pl. 6, figs. 1-5.
  - St. Louis Group: Spergen Hill, Paynter's Hill, and Bloomington, Indiana, Alton, Illinois.
  - Keokuk L. S.: Keokuk and Augusta, Iowa; Appanoose, Illinois; near Boonville, Missouri.
- 1883. Orthis dubia. Hall, 12th Rep. Geol. Surv. Ind., p. 324, pl. 29, figs. 1-5.
  St. Louis Group: Spergen Hill, Paynter's Hill, Lanesville, and Bloomington, Indiana.
- 1892. Orthis dubia. Hall and Clarke, Int. to Study of Brach., pt. 1, pl. 12, figs. 10-13.
  St. Louis Group: Lebanon and Litchfield, Kentucky; Lanesville, Indiana.
- 1892. Orthis dubia. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 6A, figs. 18-22. St. Louis Group: Lebanon, Kentucky; Lanesville, Indiana. Chester L. S.: Litchfield, Kentucky.
- 1894. Orthis dubia. Keyes, Mo. Geol. Surv., vol. 5, p. 64. St. Louis L. S.: Barrett, St. Louis County, Missouri.

### Rhipidomella michelini L'Eveille.

- 1865. Orthis Michelini. Winchell, Proc. Acad. Nat. Sci. Phil., p. 116. Waverly S. S.: Near Newark, Licking County, Ohio.
- 1869. Orthis Michelini. Winchell, Safford's Geol. of Tenn., p. 442.

  Three feet above Black Shale: White's Creek, Davidson County, Tennessee.
- 1870. Orthis Michelini? Winchell, Proc. Am. Phil. Soc., vol. 11, p. 251.
  Waverly Group: Rockville and Granville, Ohio; Vinton County, Ohio;

near Shafer's, Pennsylvania. See also Rhipidomella oveni.

# Rhipidomella nevadensis Meek.

- 1877. Orthis Michelini var. Nevadensis. Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 63, pl. 7, figs. 1-1c.
  - Carboniferous L. S.: White Pine County, Nevada, 25 miles northeast of Hamilton on the Egan road; Railroad Canyon, Diamond Mountains; pass between Desert and Pleasant valleys.

# Rhipidomella missouriensis Swallow.

- 1860. Orthis Missouriensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 639. Chemung Rocks: Cooper and Marion counties, Missouri.
- 1892. Orthis Missouriensis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 6A, figs. 16, 17.

Chouteau L. S.: Pike County, Missour.

#### Rhipidomella occasus Hall.

1860. Orthis occasus. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 111. Goniatite L. S.: Rockford, Indiana.

### Rhipidomella oweni Hall and Clarke.

- 1882. Orthis Michelini? Hall, Rep. N. Y. State Geol. for 1882, pl. (6) 36, figs. 19-21. Keokuk Group: Buttonmould Knobs, Kentucky.
- 1892. Orthis (Rhipidomella) Oweni. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, p. 342, pl. 6, figs. 19-21.
- Keokuk Group (Knobstone formation): Buttonmould Knobs, Kentucky. 1897. Orthis (Rhipidomella) Oweni. Hall, 14th Rep. N. Y. State Gool., p. 341, pl.4, figs. 24-26.

Keokuk Group: Buttonmould Knobs, Kentucky.

### Rhipidomella pecosi Marcou.

- 1858. Orthis pecosii. Marcou, Geol. N. A., p. 48, pl. 6, figs. 14-14b. Mountain L. S.: Pecos Village, New Mexico.
- 1858. Orthis carbonaria. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 218. Middle Coal Measures: Lexington, Missouri.
- 1864. Orthis (sp. undet.). Meek, Pal. Cal., vol. 1, p. 10, pl. 2, figs. 5-5c. Carboniferous: Bass's Ranch, Shasta County, California.
- 1872. Orthis carbonaria. Meek, U. S.Geol. Surv. Nebr., p. 173, pl. 1, figs. 8a-c. Upper Coal Measures: Rock Bluff and Nebraska City, Nebraska; Iowa; Kansas; Illinois.

Middle Coal Measures: Lexington, Missouri.

- 1873. Orthis carbonaria. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 571, pl. 25, fig. 4.
  - Upper Coal Measures: Lasalle, Illinois.
- 1877. Orthis Pecosii. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 125, pl. 9, figs. 5a-e.
  Carboniferous: Santa Fé, New Mexico.
- 1883. Orthis carbonaria. Hall, Rep. N. Y. State Geol. for 1882, pl. (7) 37, figs. 1-4. Coal Measures: Springfield, Illinois.
- 1884. Orthis Pecosi. White, 13th Rep. Geol. Surv. Ind., p. 129, pl. 32, figs. 20-22. Coal Measures: Horse Shoe of Little Vermilion and Garrett's Mill, Vermilion County, Indiana.
- 1892. Orthis Pecosi. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 7, figs. 1-4.
  Coal Measures: Near Springfield, Illinois.
- 1894. Orthis pecosii. Keyes, Mo. Geol. Surv., vol. 5, p. 64. Coal Measures: Kansas City, Missouri.
- 1897. Orthis pecosii. Smith, Proc. Am. Phil. Soc., vol. 35, p. 27.
  Upper Coal Measures: Poteau Mountain, Indian Territory.

#### Rhipidomella subelliptica White and Whitfield.

1862. Orthis subelliptica. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 292.

Chemung Group: Burlington, Iowa.

1870. Orthis subelliptica? Winchell, Proc. Am. Phil. Soc., vol. 11, p. 251. Waverly Group: Sciotoville, Ohio.

# Rhipidomella thiemei White.

- 1880. Orthis thiemei. White, Cont. to Pal., No. 8, p. 164, pl. 41, figs. 4a-d. Upper Kinderhook Group: Burlington, Iowa.
- 1892. Orthis Thiomii. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 6A, figs. 14, 15. Burlington L. S.: Burlington, Iowa.

### Rhipidomella vanuxemi Hall.

- 1888. Orthis vanuxemif Herrick, Bull. Den. Univ., vol. 4, pl. 9, fig. 10. Bedford Shale: Central College, Ohio.
- 1889. Orthis vanuxemi. Herrick, Am. Geol., vol. 3, pl. 4, fig. 10. Bedford Shale: Ohio.
- 1895. Orthis vanuzemi. Herrick, Geol. Surv. Ohio, vol. 7, pl. 20, fig. 10. Shale above Berea Grit: Ohio.

### Rhipidomella vanuxemi var. pulchellus Herrick.

- 1888. Orthis Vanuxemi var. pulchellus. Herrick, Bull. Den. Univ., vol. 3, p. 38, pl. 5, fig. 9.
  - Waverly Group: Licking County, Ohio.
- 1895. Orthis vanuxemi var. gracilis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 21, fig. 9. Kinderhook: Granville, Ohio.

## Rhipidomella (species undetermined).

1888. Orthis sp. Herrick, Bull. Den. Univ., vol. 4, pl. 10, figs. 21, 22.

Waverly Group: Cuyahoga Falls, Ohio.

1892. Orthis sp. ? (compare O. Ponelope.) Hall and Clarke, Pal. N. Y., vol. 8, pt. 1 pl. 6A, fig. 11.

Waverly Group: Granville, Ohio.

### RHODOCRINUS Miller, 1821.

## Rhodocrinus barrisi Hall.

1861. Rhodocrinus barrisi. Hall, Desc. New Spec. Crin., p. 9. Burlington, L. S.

1861. Rhodocrinus barrisi var. divergens. Hall, Desc. New Spec. Crin., p. 9. Burlington L. S.

1861. Rhodocrinus Barrisi. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 322. Burlington L. S.: Burlington, lowa.

1861. Rhodocrinus Barrisi var. divergens. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 324.
Burlington L. S.: Burlington, Iowa.

1872. Rhodocrinus Barrisi. Hall, Photo. Plates of Crinoids, pl. 6, figs. 16, 17.

1872. Rhodocrinus Barrisi var. divergens. Hall, Photo. Plates of Crinoids, pl. 6, fig. 18.

1897. Rhodocrinus Barrisi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 230, pl. 12, figs. 3, 4a-d, 5a, b.

Upper Burlington L. S.: Burlington, Iowa.

#### Rhodocrinus barrisi var. divergens. See Rhodocrinus barrisi.

## Rhodocrinus barrisi var. striatus Wachsmuth and Springer.

1897. Rhodocrinus Barrisi var. striatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 231, pl. 12, fig. 6.

Upper Burlington L. S.: Burlington, Iowa.

#### Rhodocrinus benedicti Miller.

1892. Rhodocrinus benedicti. Miller, Adv. Sheets 18th Rep. Geol. Surv. Ind., p. 15, pl. 2, figs. 18-20.

Keokuk Group: Harrison County, Indiana.

1894. Rhodocrinus benedicti. Miller, 18th Rep. Geol. Surv. Ind., p. 289, pl. 2, figs. 18-20.

Keokuk Group: Harrison County, Indiana.

1897. Rhodocrinus Henedicti. Wachsmuth and Springer, N. Am. Crin. Cam., p. 224. Keokuk Group: Harrison County, Indiana.

### Rhodocrinus blairi Miller and Gurley.

1896. Rhodocrinus blairi. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 37, pl. 2, tigs. 20-23.

Chouteau L. S.: Sedalia, Missouri.

#### Rhodocrinus bozemanensis Miller and Gurley.

1897. Rhodocrinus bozemanensis. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 40, pl. 3, fig. 2.

Burlington or Keokuk Group: Bridger Mountains, near Bozeman, Montana.

# Rhodocrinus bridgerensis Miller and Gurley.

1897. Rhodocrinus bridgerensis. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 41, pl. 3, fig. 3.

Burlington or Keokuk Group: Bridger Mountains, near Bozeman, Montana.

Rhodocrinus calatus. See Rhodocrinus nanus.

## Rhodocrinus coxanus Worthen.

- 1882. Rhodocrinus cozanus. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 29.
  Upper part of geode bed, Keokuk Group: 1 mile below Keokuk, Iowa.
- 1883. Rhodocrinus Coxanus. Worthen, Geol. Surv. Ill., vol. 7, p. 305, pl. 28, fig. 7.

  Keokuk Group, (upper part of geode bed): 1 mile below Keokuk, Iowa.
- 1883. Rhodocrinus polydactylus. Worthen, Geol. Surv. Ill., vol. 7, p. 305, pl. 27, fig. 5.

Keokuk Group (upper part of geode bed): 1 mile below Keokuk, Iowa.

- 1894. Rhodocrinus coxanus. Keyes, Mo. Geol. Surv., vol. 4, p. 163, pl. 22, fig. 3. Keokuk L. S.: Boonville, Missouri; Keokuk, Iowa.
- 1897. Raodocrinus coxanus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 222, pl. 13, figs. 6, 7.

Keokuk Group, (upper part of geode bed): Hamilton, Illinois.

### Rhodocrinus douglassi Miller and Gurley.

1897. Rhodocrinus douglassi. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 39, pl. 3, fig. 1.

Burlington or Keokuk Group: Bridger Mountains, near Bozeman, Montana.

# Rhodocrinus kirbyi Wachsmuth and Springer.

1890. Rhodocrinus kirbyi. Wachsmuth and Springer, Geol. Surv. Ill., vol. 8, p. 180, pl. 15, fig. 10; pl. 16, fig. 3.

Kinderhook Group: Legrand, Iowa.

1897. Rhodocrinus Kirbyi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 226, pl. 12, figs. 1a-d.

Kinderhook: Legrand, Marshall County, Iowa.

#### Rhodocrinus nanus Meek and Worthen.

- 1866. Rhodocrinus nanus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 254. Lower Burlington Group: Burlington, Iowa.
- 1868. Rhodocrinus nanus. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 476, pl. 18, figs. 2a, b.

Burlington Group: Burlington, Iowa.

1890 Rhodocrinus namus. Wachsmuth and Springer, Geol. Surv. III., vol. 8, p. 182, pl. 16, fig. 4; pl. 17, fig. 5.

Kinderhook Group. Legrand and Burlington, Iowa.

1890. Rhodocrinus sculptus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 359, pl. 7, fig. 11.

Kinderhook Group: Legrand, Iowa.

1890. Rhodocrinus calatus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 360, pl. 7, fig. 10.

Kinderhook Group: Legrand, Iowa.

1897. Rhodocrinus nanus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 228, pl. 11, figs. 7a, b; pl. 12, figs. 2a, b. Kinderhook Group: Legrand, Marshall County, Iowa.

# Rhodocrinus parvus Miller.

- 1891. Rhodovrinus parvus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 39, pl. 5, figs. 8, 9. Keokuk Group: Boonville, Missouri.
- 1897. Rhodocrinus parvus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 229.
  Lower Warsaw L. S.: Boonville. Missouri.

Rhodocrinus polydactylus. See Rhodocrinus coxanus.

Rhodocrinus sculptus. See Rhodocrinus nanus.

#### Rhodocrinus truncatus Wachsmuth and Springer.

1897. Rhodocrinus truncatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 231, pl. 13, figs. 2a-f.

Upper Burlington L. S.: Burlington, lows.

### Rhodocrinus tuberculatus Wachsmuth and Springer.

1897. Rhodocrimus tuberculatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 232, pl. 13, figs. 3, 4.

Lower Burlington L. S.: Lake Valley, New Mexico.

### Rhodocrinus varsoviensis Hall.

1860. Rhodocrinus varsoviensis. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, p. 80. Warsaw L. S.: Warsaw, Illinois.

### Rhodocrinus vesperalis White.

1880. Rhodocrinus vesperalis. White, Proc. U. S. Nat. Mus., vol. 2, p. 259, pl. 1, figs. 11, 12.

Upper Coal Measures: 30 miles west of Humboldt, Kansas.

1880. Rhodocrinus vesperalis. White, Cont. to Inv. Pal., No. 6, p. 129, pl. 35, figs. 4a, b.

Upper Coal Measures: 30 miles west of Humboldt, Kansas.

#### Rhodocrinus wachsmuthi Hall.

Rhodocrinus wachsmuthi. Hall, Desc. New Spec. Crin., p. 18.
 Burlington L. S.

1894. Rhodocrinus wachsmuthi. Keyes, Mo. Geol. Surv., vol. 4, p. 163. Lower Burlington L. S.: Louisiana, Missouri.

1897. Rhodocrinus Wachsmuthi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 222, pl. 13, figs. 5a-d; pl. 15, fig. 7.

Lower Burlington L. S.: Burlington, Iowa.

### Rhodocrinus watersianus Wachsmuth and Springer.

1890. Rhodocrinus watersianus. Wachsmuth and Springer, Geol. Surv. Ill., vol. 8, p. 184, pl. 17, fig. 16.

Kinderhook Group: Legrand, Iowa.

1897. Rhodocrinus waterstanus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 221, pl. 12, fig. 9.

Kinderhook Group: Legrand, Marshall County, Iowa.

#### Rhodocrinus whitei Hall.

1861. Rhodoorinus whitei. Hall, Desc. New Spec. Crin., p. 9. Chemung S. S.: Burlington, Iowa.

1861. Rhodocrinus whitei var. burlingtonensis. Hall, Desc. New Spec. Crin., p. 9. Chemung S. S.: Burlington, Iowa.

1861. Rhodocrinus Whitei. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 324.
Base of Burlington L. S.: Burlington, Iowa.

1861. Rhodocrinus Whitei var. Burlingtonensis. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 325.

Base of Burlington L. S.: Burlington, Iowa.

1872. Rhodocrinus Whitei. Hall, Photo. Plates of Crinoids, pl. 6, figs. 19-21.

1894. Rhodocrinus whitei. Keyes, Mo. Geol. Surv., vol. 4, p. 163. Lower Burlington L. S.: Springfield and Louisiana, Missouri.

1897. Rhodocrinus Whitsi. Wachsmuth and Springer, N. Am. Crin. Cam., p. 223, pl. 13, figs. 1a-c; pl. 15, figs. 6a, b.

Lower Burlington L. S.: Burlington, Iowa.

#### Rhodocrinus wortheni Hall.

1858. Rhodocrinus wortheni. Hall, Geol. Iowa, vol. 1, pt. 2, p. 556, pl. 9, figs. 8a-c. Burlington L. S.: Burlington, Iowa.

1894. Rhodocrinus wortheni. Keyes, Mo. Geol. Surv., vol. 4, p. 162. Lower Burlington L. S.: Louisiana, Missouri.

1897. Rhodocr.nus Wortheni. Wachsmuth and Springer, N. Am. Crin. Cam., p. 220, pl. 11, fig. 6; pl. 12, figs. 7a-c.

Lower Burlington L. S.: Burlington, Iowa.

## Rhodocrinus wortheni var. urceolatus Wachsmuth and Springer.

1897. Ithodocrinus Wortheni, var. urceolatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 221, pl. 12, figs. 8a, b.

Lower Burlington L. S.: Lake Valley, New Mexico.

# RHŒCHINUS, Keeping.

### Rheechinus burlingtonensis Meek and Worthen.

1860. Palæchinus Burlingtonensis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 396.

Burlington L. S.: Burlington, Iowa.

1866. Palachinus burlingtonensis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 230, pl. 16, figs. 3a-c.

Burlington L. S.: Burlington, Iowa.

1895. Palachinus burlingtonensis. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 180. Burlington L. S.: Burlington, Iowa.

1896. Rhoechinus burlingtonensis. Jackson, Bull. Geol. Soc. Am., vol. 7, p. 203. Burlington L. S.: Burlington, Iowa.

### Rhechinus gracilis Meek and Worthen.

1809. Palachinus gracilis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 82. Upper Burlington L. S.: Burlington, Iowa.

1873. Palachinus gracilis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 473, pl. 10, fig. 2.

Burlington L. S.: Burlington, Iowa.

1895. Palachinus gracilis. Keyes, Proc. Iowa Acad. Sci., vol. 2, p. 180. Upper Burlington L. S.: Burlington, Iowa.

1896. Rhoechinus gracilis. Jackson, Bull. Geol. Soc. Am., vol. 7, p. 201, pl. 7, figs. 36, 37.

Waverly Group: Bever Creek, 1 mile above the mouth of Leatherwood Creek, Menifee County Kentucky.

Burlington Group: Burlington, Iowa.

# RHOMBOPORA Meek, 1872.

#### Rhombopora angustata Ulrich.

1890. Rhombopora angustata. Ulrich, Geol. Surv. Ill., vol. 8, p. 652, pl. 70, figs. 6, 6a. Keokuk Group: King's Mountain, Kentucky.

### Rhombopora armata Ulrich.

1884. Rhombopora armata. Ulrich. Jour. Cinn. Soc. Nat. Hist., vol. 7, p. 31, pl. 1, figs. 5, 5a.

Kaskaskia Group: Tateville, Kentucky.

### Rhombopora? aspurula Ulrich.

1890. Rhombopora? asperula. Ulrich, Geol. Surv. Ill., vol. 8, p. 656, pl. 70, tigs. 9-9e. Keokuk Group: Keokuk, Iowa; Nauvoo and Warsaw, Illinois.

### Rhonbopora attenuata Ulrich.

1890. Rhombopora attenuata. Ulrich, Geol. Surv. Ill., vol. 8, p. 655, pl. 70, tig. 7. Keckuk Group: Warsaw, Illinois.

1894. Rhombopora attenuata. Keyes, Mo. Geol. Surv., vol. 5, p. 34. Keokuk L. S.: Warsaw, Illinois.

Rhombopora confluens Ulrich. See Acanthoclema confluens.

#### Rhombopora crassa Ulrich.

1884. Rhombopora crassa. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 7, p. 28, pl. 1, figs. 2-2b.

Upper Coal Measures: Kansas City, Missouri.

Bull. 153----34

### Rhombopora crassa Ulrich—Continued.

1894. Rhombopora crassa. Keyes, Mo. Geol. Surv., vol. 5, p. 34. Upper Coal Measures: Kansas City, Missouri.

### Rhombopora decipiens Ulrich.

1890. Rhombopora decipiens. Ulrich, Geol. Surv. Ill., vol. 8, p. 657, pl. 71, figs. 3-3d. St. Louis Group: Monroe County, Illinois.

### Rhombopora dichotoma Ulrich.

1890. Rhombopora dichotoma. Ulrich, Geol. Surv. Ill., vol. 8, p. 650, pl. 70, figs. 13-13b.

Burlington L.S.: Burlington, Iowa.

f Keokuk L. S.: f Warsaw, Illinois.

1894. Rhombopora dichotoma. Keyes, Mo. Geol. Surv., vol. 5, p. 33. Burlington L. S.: Burlington, Iowa; † Hannibal, Missouri.

### Rhombopora elegantula Ulrich.

1884. Rhombopora elegantula. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 7, p. 33, pl. 1, figs. 3-3b.

† Keokuk Group: King's Mountain, Kentucky.

# Rhombopora exigua Ulrich.

1890. Rhombopora exigua. Ulrich, Geol. Surv. Ill., vol. 8, p. 651, pl. 70, figs. 10, 10a. Burlington L. S.: Burlington, Iowa.

### Rhombopora gracilis Ulrich.

1890. Rhombopora gracilis. Ulrich, Geol. Surv. Ill., vol. 8, p. 651, pl. 70, figs. 11-11b.

Burlington L. S.: Burlington, Iowa.

### Rhombopora incrassata Ulrich.

1888. Rhombopora incrassata. Ulrich, Bull. Den. Univ., vol. 4, p. 89, pl. 14, figs. 16

Cuyahoga Shale: Lodi, Ohio.

Keokuk Group: King's Mountain, Kentucky.

1890. Rhombopora incrassata. Ulrich, Geol. Surv. Ill., vol. 8, p. 652, pl. 70, figs.

Keokuk Group: King's Mountain and Buttonmould Knob, Kentucky.

# Rhombopora lepidodendroidea Meek.

1866. Stenopora columnaris (pars). Geinitz, Carb. und Dyas in Nebr., p. 66. (Not Schloth, 1813.)

Nebraska City, Bennett's Mill, and Wyoming, Nebraska.

1872. Rhombopora lepidodendroides. Meek, U. S. Geol. Surv. Nebr., p. 141, pl. 7, figs. 2a-f.

Upper Coal Measures: Nebraska City, Bennett's Mill, Wyoming, Rock Bluff, and Plattsmouth, Nebraska; Kansas; Iowa; Missouri; Illinois.

1877. Rhombopora lepidodendroides. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 99, pl. 6, figs. 5a-d.

Carboniferous: West face of Oquirrh range, near "E. T. City," Utah, and at confluence of White Mountain and Black rivers, Arizona.

1884. Rhombopora lepidodendroidea. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 7, p. 27, pl. 1, figs. 1-1b.
Upper Coal Measures: Kansas City, Missouri; Nebraska City and Wyo-

Upper Coal Measures: Kansas City, Missouri; Neoraska City and Wyo ming, Nebraska.

1887. Rhombopora lepidodendroidea. Foerste, Bull. Den. Univ., vol. 2, p. 73, pl. 7, figs. 3a, b.
('oal Measures: Flint Ridge and Bald Hill, Ohio.

1887. !:hombopora —... Foerste, Bull. Den. Univ., vol. 2, p. 74, pl. 7, figs. 5a-c. Coal Measures: Flint Ridge, Ohio.

### Rhombopora repidodendroidea Meek-Continued.

- 1888. Rhombopora lepidodendroides. Keyes, Proc. Acad. Nat. Sci. Phil., p. 225. Lower Coal Measures: Des Moines, Iowa.
- 1894. Rhombopora lepidodendroidea. Keyes, Mo. Geol. Surv., vol. 5, p. 35, pl. 33, figs. 4a, b.

Upper Coal Measures: Kansas City, Missouri.

1897. Rhombopora lepidendroides. Smith, Proc. Am. Phil. Soc., vol. 35, p. 27. Upper Coal Measures: Poteau Mountains, Indian Territory.

### Rhombopora minor Ulrich.

1890. Rhombopora minor. Ulrich, Geol. Surv. Ill., vol. 8, p. 659, pl. 70, figs. 4, 4a. Chester Group: Sloan's Valley and Litchfield, Kentucky.

### Rhombopora multipora Foerste.

1887. Rhombopora multipora. Foerste, Bull. Den. Univ., vol. 2, p. 72, pl. 7, figs. 1a-c.

Coal Measures: Flint Ridge, Ohio.

1887. Rhombopora multipora. Foerste, Bull. Den. Univ., vol. 2, p. 87. Coal Measures: Seville, Illinois.

### Rhombopora nicklesi Ulrich.

1890. Rhombopora nicklesi. Ulrich, Geol. Surv. Ill., vol. 8, p. 661, pl. 70, figs. 1-1c.

Lower Coal Measures: Sparta, Illinois.

#### Rhombopora ohioensis Ulrich.

1888. Rhombopora ohioensis. Ulrich, Bull. Den. Univ., vol. 4, p. 90, pl. 14, fig. 15.

Cuyahoga Shale: Richtield and Lodi, Cuyahoga County, and Moot's Run,

Licking County, Ohio.

1885. Rhombopora ohioensis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 19, fig. 9. Cuyahoga Shale: Ohio.

### Rhombopora persimilis Ulrich.

1884 Rhombopora persimilis. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 7, p. 30, pl. 1, figs. 7-7d.

Kaskaskia Group: Chester, Illinois; Tateville, Kentucky.

1890. Rhombopora persimilis. Ulrich, Geol. Surv. Ill., vol. 8, p. 659, pl. 70, fig. 3. Chester Group: Chester, Illinois; Sloau's Valley (Tateville), Kentucky.

#### Rhombopora pulchella Ulrich.

1884. Rhombopora pulchella. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 7, p. 31, pl. 1, figs. 6, 6a.

Kaskaskia Group: Tateville, Kentucky.

### Rhombopora simulatrix Ulrich.

1890. Rhombopora simulatrix. Ulrich, Geol. Surv. Ill., vol. 8, p. 657, pl. 71, figs. 2-2c.

St. Louis Group: Columbia, etc., Monroe County, Illinois.

# Rhombopora? spiralis Ulrich.

1890. Rhombopora † spiralis. Ulrich, Geol. Surv. Ill., vol. 8, p. 656, pl. 71, tigs. 5-5d. Keokuk Group: King's Mountain, Kentucky.

### Rhombopora tabulata Ulrich.

1890. Rhombopora tabulata. Ulrich, Geol. Surv. Ill., vol. 8, p. 658, pl. 70, figs 2-2c. Chester Group: Kaskaskia and Chester, Illinois; Sloan's Valley, Kentucky.

1894. Rhombopora tabulata. Keyes, Mo. Geol. Surv., vol. 5, p. 34.

Kaskaskia L. S.: Ste. Genevieve, Missonri.

### Rhombopora tenuirama Ulrich.

1890. Rhombopora tenuirama. Ulrich, Geol. Surv. Ill., vol. 8, p. 660, pl. 70, figs. 8-8b.

Chester Group: Kaskaskia, Illinois; Sloan's Valley, Kentucky.

# Rhombopora tenuirama Ulrich-Continued.

1894. Rhombopora tenuirama. Keyes, Mo. Geol. Surv., vol. 5, p. 34. Kaskaskia L. S.: Kaskaskia, Illinois.

### Rhombopora transversalis Ulrich.

1890. Rhombopora transversalis. Ulrich, Geol. Surv. Ill., vol. 8, p. 654, pl. 71, figs. 4-4b.

Keokuk Group: Plymouth, Nauvoo, and Warsaw, Illinois.

1894. Rhombopora transversalis. Keyes, Mo. Geol. Surv., vol. 5, p. 34. Keokuk L. S.: Warsaw, Illinois.

### Rhombopora varians Ulrich.

1890. Rhombopora varians. Ulrich, Geol. Surv. Ill., vol. 8, p. 653, pl. 71, figs. 1-1b. Keokuk Group: Near Plymouth, Illinois; near Whitehall, Green County, Illinois; Warsaw and Nauvoo, Illinois.

1894. Rhombopora rarians. Keyes, Mo. Geol. Surv., vol. 5, p. 33. Keokuk L. S.: Warsaw, Illinois.

# Rhombopora wortheni Ulrich.

1884. Rhombopora wortheni. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 7, p. 32, pl. 1, figs. 4-4b.

St. Louis Group: Near Somerset, Kentucky.

# RHYNCHONELLA Fischer, 1809.

### Rhynchonella acadiensis Davidson.

1863. Rhynchonella Acadiensis. Davidson, Quart. Jour. Geol. Soc. Lond., vol. 19, p. 172, pl. 9, fig. 16.

Lower Carboniferous L. S.: Brookfield, Nova Scotia.

1868. Rhynchonella Acadieneis. Dawson, Acad. Geol., p. 294, fig. 94. Carboniferous L. S.: Brookfield, Nova Scotia.

# Rhynchonella algeri McChesney.

1860. Rhynchonella algeri. McChesney, Desc. New Pal. Foss., p. 51. Coal Measures: Big Creek, near New Harmony, Indiana.

Rhynchonella angulata. See Enteletes hemiplicata.

### Rhynchonella arctirostrata Swallow.

1863. Rhynchonella arctirostrata. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 84.

Archimedes L. S.: Cooper County, Missouri.

### Rhynchonella barquensis Winchell.

1862. Rhynchonella barquensis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 408. Marshall Group: Pointe Aux Barques, Michigan.

Rhynchonella boonensis. See Leiorhynchus boonensis.

### Rhynchonella camerifera Winchell.

1862. Rhynchonella camerifera. Winchell, Proc. Acad. Nat. Sci. Phil., p. 408. Marshall Group: Pointe Aux Barques, Michigan.

Rhynchonella caput-testudinis. See Camarophoria caput-testudinis.

# Rhynchonella carbonaria McChesney.

1860. Rhynchonella carbonaria. McChesney, Desc. New Pal. Foss., p. 51. Upper Coal Measures: Near Farmington, Illinois.

Rhynchonella contracta. See Camarotæchia contracta.

## Rhynchonella cooperensis Shumard.

1855. Rhynchonella Cooperensis. Shumard, Geol. Rep. Mo., p. 204, pl. C, figs. 4a-d. Chouteau L. S.: Vandever's Falls, Cooper County, Missouri.

### Rhynchonella cooperensis Shumard—Continued.

1884. Camarophoria Cooperensis? Walcott, Pal. Eureka Dist., p. 224, pl. 18, fig. 6.

Lower Carboniferous: Eureka District, Nevada.

1894. Rhynchonella cooperensis. Keyes, Mo. Geol. Surv., vol. 5, p. 101. Chouteau I. S.: Providence, Missouri.

Rhynchonella dawsoniana. See Pugnax dawsonianus.

Rhynchonella eatoniæformis. See Pugnax rockymontana.

Rhynchonella endlichi. See Camarotæchia endlichi.

## Rhynchonella eurekensis Walcott.

1884. Rhynchonella Enrekensis. Walcott, Pal. Eureka Dist., p. 223, pl. 18, figs. 8-8c. Lower Carboniferous: Eureka District, Nevada.

### Rhynchonella evangelina Hartt.

1868. Rhynchonella Eraugelina. Hartt, Dawson's Acad. Geol., p. 299. Carboniferous L. S.: Nova Scotia.

Rhynchonclla explanata. See Camarophoria explanata.

Rhynchonella greeniana. See Pugnax greenianus.

Rhynchonella grosvenori. See Pugnax grosvenori.

### Rhynchonella guadalupæ Shumard.

1858. Rhynchonella Guadalupα. Shumard, Trans. St. Louis. Acad. Sci., vol. 1, p. 295.

White Permian L. S.: Guadalupe Mountains.

1859. Rhynchonella Guadalupæ. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 392, pl. 11, figs. 6a-c.

White Permiau L. S.: Guadalupe Mountains.

### Rhynchonella heteropsis Winchell.

1865. Rhynchonella heteropsis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 121.
Calcareous bed No. 4, Yellow S. S.: Burlington, Iowa; near Hamburg, Illinois; Weymouth, Ohio.

### Rhynchonella hubbardi Winchell.

1862 Rhynchonella Hubbardi. Winchell, Proc. Acad. Nat. Sci. Phil., p. 407.

Marshall Group: Marshall and Pointe Aux Barques, Michigan.

1865. Rhynchonella Hubbardi. Winchell Proc. Acad. Nat. Sci. Phil., p. 122.
Marshall Group: Pointe Aux Barques, Napoleon Cut, Jackson County,
Michigan; Valley Forge, near Cuyahoga Falls, and Talmadge, Ohio.

### Rhynchonella ida Hartt.

1868. Rhynchonella Ida. Hartt, Dawson's Acad. Geol., p. 298. Carboniferous L. S.: Bed A, Windsor, Nova Scotia.

### Rhynchonella illinoiensis Worthen.

1884. Rhynchonella illinoiensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 24

Coal Measures: Peoria County, Illinois.

1890. Rhynchonella illinoieneis. Worthen, Geol. Surv. Ill., vol. 8, p. 104, pl. 11, figs. 3-3c.

Coal Measures: Peoria County, Illinois.

# Rhynchonella indentata Shumard.

1859. Rhynchonella indentata. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 393. White Permian L. S.: Guadalupe Mountains.

### Rhynchonella macra Hall.

1856. Rhynchonella macra. Hall, Trans. Albany Inst., vol. 4, p. 11. St. Louis L. S.: Alton, Illinois.

## · Rhynchonella macra Hall—Continued.

1882. Rhynchonella macra. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 52, pl. 6, figs. 40-42.

St. Louis Group: Alton, Illinois.

1883. Rhynchonella macra. Hall, 12th Rep. Geol. Surv. Ind., p. 334, pl. 29, figs. 40-42.

St. Louis Group: Lanesville, Indiana; Alton, Illinois.

Rhynchonella marshallensis. See Camarotechia marshallensis.

### Rhynchonella medialis Simpson.

1889. Rhynchonella medialis. Simpson, Trans. Am. Phil. Soc., vol. 15, p. 444, fig. 9. Waverly Group: Near Warren, Pennsylvania.

## Rhynchonella metallica White.

1874. Rhynchonella metallica. White, Prelim. Rep. Inv. Foss., p. 20.

Carboniferous (Coal Measures): Old Potosi Mine, Lincoln County, Nevada.

1877. Rhynchonella metallica. White, U. S. Geog. Surv.W. 100 Merid., vol. 4, p. 129, pl. 10, figs. 10a-d.

Carboniferous: Old Potosi Mine, Lincoln County, Nevada.

## ·Rhynchonella micropleura Winchell.

1865. Rhynchonella (Retzia?) micropleura. Winchell, Proc. Acad. Nat. Sci. Phil., p. 122.

Marshall Group: Battle Creek, Michigan.

Rhynchonella missouriensis. See Pugnax missouriensis and Pugnax striaticostata.

Rhynchonella mutata. See Pugnax mutata.

### Rhynchonella obsolens Hall.

1860. Rhynchonella (Eatonia) obsolens. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 111.

Goniatite L. S.: Rockford, Indiana. .

## Rhynchonella opposita White and Whitfield.

1862. Rhynchonella opposita. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 294.

Cheming Group: Burlington, Iowa.

Rhynchonella osagensis. See Pugnax uta.

Rhynchonella ottumica. See Pugnax ottumwa.

Rhynchonella parvini. See Camarophoria subtrigona.

### Rhynchonella perrostellata Swallow.

1863. Rhynchonella perrostellata. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 85.

Archimedes L. S.: ('ooper ('ounty, Missouri.

### Rhynchonella persinuata Winchell.

1865. Rhynchonella persinuata. Winchell, Proc. Acad. Nat. Sci. Phil., p. 121. Yellow S. S.: Burlington, Iowa.

### Rhynchonella pleurodon Phillips.

1878. Rhynchonella pleurodon. Etheridge, Quart. Jour. Geol. Soc. Lond., vol. 34, p. 632.

Carboniferous: Feilden Isthmus, latitude 82° 43'.

Rhynchonella pugnus. See Pugnax pugnus.

Rhynchonella pustulosa. See Rhynchopora pustulosa.

# Rhynchonella ricinula Hall.

1856. Rhynchonella ricinula. Hall, Trans. Albany Inst., vol. 4, p. 9. St. Louis L. S.: Spergen Hill, Indiana.

1882. Rhynchonella ricinula. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 53, pl. 6, fig. 46.

St. Louis Group: Spergen Hill, Indiana.

1883. Rhynchonella ricinula. Hall, 12th Rep. Geol. Surv. Ind., p. 330, pl. 29, fig. 46.

St. Louis Group: Spergen Hill and Lanesville, Indiana.

Rhynchonella ringens. See Camarophoria ringens.

Rhynchonella rockymontana. See Pugnax rockymontana.

Rhynchonella sageriana. See Camarotechia sagerina.

Rhynchonella sappho. See Camarotæchia sappho.

# Rhynchonella striata Simpson.

1889. Rhynchonella striata. Simpson, Trans. Am. Phil. Soc., vol. 15, p, 444, fig. 10. Waverly Group: four miles southeast of Warren, Pennsylvania.

Rhynchonella subcircularis Winchell.

1862. Rhynchonella subcircularis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 408. Marshall Group: Pointe Aux Barques, Michigan.

Rhynchonella subcuneata. See Camarophoria subcuneata.

Rhynchonella subtrigona. See Camarophoria subtrigona.

Rhynchonella tetraptyx Winchell.

1865. Rhynchonellat tetraptyx. Winchell, Proc. Acad. Nat. Sci. Phil., p. 120. Marshall Group: Rockford, Indiana.

### Rhynchonella texana Shumard.

1859. Rhynchonella Texana. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 393. Dark Permian L. S.: Guadalupe Mountains.

Rhynchonella thera. See Camarophoria thera.

### Rhynchonella tuta Miller.

1881. Rhynchonella tuta. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 4, p. 315, pl. 7, figs. 11-11b.

Subcarboniferous: Lake Valley Mining District, New Mexico.

#### Rhynchonella unica Winchell.

1865. Rhynchonella unica. Winchell, Proc. Acad. Nat. Sci. Phil., p. 122. Bed No. 4: Burlington, Iowa.

Rhynchonella uta. See Pugnax uta.

Rhynchonella wasatchensis. See Seminula wasatchensis.

#### Rhynchonella whitei.

1862. Rhynchonella Whitei. Winchell, Proc. Acad. Nat. Sci. Phil., p. 407. Marshall Group: Marshall, Michigan.

Rhynchonella wortheni. See Camarophoria wortheni.

### Rhynchouella (species undetermined).

1859. Rhynchonella sp. (†) Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 393. White Permian L. S.: Guadalupe Mountains.

1863. Rhynchonella sp. Davidson, Quart. Jour. Gool. Soc. Lond., vol. 19, p. 173, pl. 9, fig. 17.

Lower Carboniferous L. S.: Nova Scotia.

### Rhynchonella (species undetermined)—Continued.

- 1864. Rhynchonella (sp. undt.). Meek, Pal. Cal., vol. 1, p. 12. Carboniferous: Bass's Ranch, Shasta County, California.
- 1868. Rhynchonella sp. Dawson, Acad. Geol., p. 295. Lower Carboniferous L. S.: Nova Scotia.
- 1877. Rhynchonella (n. sp.) Whiteaves, Geol. Surv. Canada, Rep. of Prog., 1875-76, p. 100.
  - Devonian or Carboniferous: Fossil Point, Peace River, Canada.
- 1888. Rhynchonella sp. Herrick, Bull. Den Univ., vol. 3, pl. 5, fig. 18; pl. 7, fig. 9; pl. 12, fig. 12.
  Waverly Group: Licking County, Ohio.
- 1888. Rhynchonella sp. Herrick, Bull. Den. Univ., vol. 4, p. 23, pl. 11, fig. 22.
  (R. marshallennis! in Expl. of Plate.)
  Waverly Group: Lodi, Ohio.
- 1888. Rhynchonella sp. Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 39. Waverly Group: Cuyahoga Falls, Ohio.
- 1895. Rhynchonella sp. Herrick, Geol. Surv. Ohio, vol. 7, pl. 21, fig. 18. Waverly Group: Ohio.
- 1895. Camarotachia sp. † Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 57, tigs. 51-53. Burlington L. S.: Burlington, Iowa.
- 1895. Camarotæchia sp. indet. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 57, fig. 54.
  - Waverly Group: Ohio.
- 1897. Rhynchonella sp. indet. Smith, Proc. Am. Phil. Soc., vol. 35, p. 30. Lower Coal Measures: White and Crawford counties, Arkansas.

### RHYNCHOPORA King, 1856.

### Rhynchopora pustulosa White.

- \*1860. Rhynchonella pustulosa. White, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 236. Burlington L. S.: Burlington, Iowa.
- 1877. Rhynchonella pustulosa? Hall and Whitfield. U. S. Geol. Expl. 40 Par., vol. 4, p. 257, pl. 4, figs. 12-14.
  - Waverly Group: Logan Canyon, Wahsatch range. Utah.
- 1894. Rhynchopora pustulosa. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 44, figs. 26-29.
  - Burlington L. S.: Burlington, Iowa.
- 1895. Rhynchopora pustulosa. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 58, figs. 1-4.
  - Burlington L. S.: Burlington, Iowa.

### RHYNCHOSPIRA Hall, 1859.

### Rhynchospira ashlandensis Heirick.

- 1888. Rhynchospira (\*) ashlandensis. Herrick, Bull Den. Univ., vol. 4, p. 25, pl. 3, fig. 16.
  - Waverly Group: Lyon Falls, Ashland County, Ohio.
- 1895. Rhynchospira (?) ashlandensis. Herrick, Geol Surv Ohio, vol. 7, pl. 23, fig. 16.
  - Cuyahoga Shale: Lyon Falls, Ohio.

### Rhynchospira scansa Hall and Clarke.

- 1895. Rhynchospira scansa. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 30, fig. 45. Waverly Group: McKean County, Pennsylvania.
- 1897. Rhynchospira scansa. Hall, 14th Rep. N. Y. State Geol., p. 360, pl. 9, fig. 2. Waverly Group: McKean County, Pennsylvania.

### Rhynchospira (species undetermined.)

1895. Rhynchospira (?) sp. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 50, fig. 44. Waverly Group: Northwestern Pennsylvania.

### ROMINGERINA Hall, 1893.

### Romingerina julia Winchell.

1862. Centronella Julia. Winchell, Proc. Acad. Nat. Sci. Phil., p. 405. Marshall Group: Pointe Aux Barques, Michigan.

1865. Centronella Julia. Winchell, Proc. Acad. Nat. Sci. Phil., p. 123. Marshall Group: 1 mile west of Orange Center, Cuyahoga County, Ohio.

1867. Centronella julia. Hall, Pal. N. Y., vol. 4, p. 419, pl. 61A, figs. 41-46. Marshall S. S.: Pointe Aux Barques, Michigan.

1888. Centronella julia. Herrick, Bull. Den. Univ., vol. 3, p. 49, pl. 2, fig. 5. Waverly Group: Licking County, Ohio.

1894. Romingerina Julia. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 52, figs. 14, 15.

Marshall Group: Pointe Aux Barques, Michigan.

1895. Romingerina Julia. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 79, figs. 28-30.

Marshall Group: Pointe Aux Barques, Michigan.

### (ROTALIA Lamark, 1804.)

Rotalia baileyi Hall. See Endothyra baileyi.

ROTELLA Lamark, 1822.

#### Rotella verruculifera White.

1881. Rotella rerruculifera. White, U. S. Geog, Surv. W. 100 Merid., vol. 3, Supp., Appendix, p. xxxii, pl. 4, figs. 7a-d.

Carboniferous: Near Taos, New Mexico.

### RUSICHNITES Dawson, 1861.

#### Rusichnites acadicus Dawson.

1868. Rusichnites Acadicus. Dawson, Acad. Geol., p. 410, fig. 157. Coal Measures: Cape Breton.

#### Rusichnites carbonarius Dawson.

1868. Rusichnites carbonarius. Dawson, Acad. Geol., p. 257, fig. 80.

Carboniferous: Nova Scotia.

### SAMPSONOCRINUS Miller and Garley, 1895.

### Sampsonocrinus hemisphericus Miller and Gurley.

1895. Sampsonocrinus hemisphericus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 51, pl. 3, figs. 7-10.

Chouteau L. S.: Sedalia, Missouri.

# SANGUINOLARIA Lamark, 1801.

#### Sanguinolaria leptogaster Winchell.

1863. Sanguinolaria? leptogaster. Winchell, Proc. Acad. Nat. Sci. Phil., p. 18. Yellow S. S.: Burlington, Iowa.

#### Sanguinolaria rostrata Winchell.

1865. Sanguinolar'a rostrata. Winchell, Proc. Acad. Nat. Sci. Phil., p. 129. Marshall Group: Battle Creek, Michigan.

### Sanguinolaria sectoralis Winchell.

1862. Sanguinolaria sectoralis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 422.

Marshall Group: Marshall, Michigan.

# Sanguinolaria septentrionalis Winchell.

1862. Sanguinolaria septentrionalis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 421 Marshall Group: Gaines, Kent County, Michigan.

### Sanguinolaria similis Winchell.

1862. Sanguinolaria similis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 421.

Marshall Group: Marshall, Michigan.

1865. Sanguinolaria similis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 130.

Marshall Group: Napoleon Cut, Jackson County, Michigan.

### Sanguinolaria (species undetermined.)

1852. Sanguinolaria. Owen, Geol. Rep. Wis., Iowa, and Minn., Tab. 3A, fig. 18. Base of Carboniferous L. S.: Burlington, Iowa.

# SANGUINOLITES McCoy, 1844.

### Sanguinolites wolus. See Sphenotus wolus.

Sanguinolites amygdalinus. See Glossites amygdalinus.

# Sanguinolites borealis Winchell.

1862. Sanguinolites borealis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 415. Marshall Group: Pointe Aux Barques and Moscow, Michigan.

#### Sanguinolites brookfieldianus Dawson.

1883. Sanguinolites Brookfieldianus. Dawson, Rep. Peter Redpath Mus., No. 2, p. 11.

Lower Carboniferous L. S.: Brookfield and Windsor, Nova Scotia.

#### Sanguinolites burlingtonensis Worthen.

1884. Sanguinolites? burlingtonensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 14.

Burlington L. S.: Calhoun County, Illinois.

1890. Sanguinolites t burlingtonensis. Worthen, Geol. Surv. Ill., vol. 8, p. 129, pl. 20, figs. 8, 8a.
Burlington L. S.: Calhoun County, Illinois.

# Sanguinolites concentricus Winchell.

1862. Cardinia concentrica. Winchell, Proc. Acad. Nat. Sci. Phil., p. 413. Marshall Group: Jonesville, Hillsdale County, Michigan.

1865. Sanguinolites concentrica. Winchell, Proc. Acad. Nat. Sci. Phil., p. 128.
Marshall Group: Hillsdale, Michigan.

Sanguinolites contractus. See Sphenotus contractus.

### Sanguinolites cylindricus Winchell.

1863. Sanguinolites cylindricus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 13. Yellow S. S.: Burlington, Iowa.

Sanguinolites flavius. See Sphenotus flavius.

Sanguinolites hannibalensis. See Grammysia hannibalensis.

### Sanguinolites iowensis Winchell.

1863. Sanguinolites Iouensis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 14. Yellow S. S.: Burlington, Iowa.

### Sanguinolites jejunus Winchell.

1863. Sanguinolites (?) jejunus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 15. Yellow S. S.: Burlington, lowa.

Sanguinolites marshallensis. See Palæoneilo marshallensis.

### Sanguinolites michiganensis.

1888. Sanguinolites michiganensis. Herrick, Bull. Den. Univ., vol. 3, p. 70, pl. 8, fig. 10.

Waverly Group: Licking County, Ohio.

Sanguinolites missouriensis. See Promacrus missouriensis.

### Sanguinolites multistriatus Worthen.

1884. Sanguinolites t multistriatus. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 11.

Keokuk Shale: Near Crawfordsville, Indiana.

1890. Sanguinolites? multistriatus. Worthen, Gool. Surv. Ill., vol. 8, p. 129, pl. 19, fig. 2.

Keokuk Shale: Near Crawfordsville, Indiana.

### Sanguinolites nænia Walcott.

1884. Sanguinolites? Nania. Walcott, Pal. Eureka Dist., p. 249, pl. 19, fig. 9. Lower Carboniferous: Eureka District, Nevada.

### Sanguinolites naiadiformis Winchell.

1870. Sanguinolites naiadiformis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 255.

Marshall Group: Hillsdale, Michigan.

Waverly Group: Newark and Granville, Ohio.

1888. Sanguinolites naiadiformis. Herrick, Bull. Den. Univ., vol. 3, p. 71, pl. 4, fig. 2; pl. 9, fig. 3; pl. 10, fig. 2.
Waverly Group: Licking County, Ohio.

1888. Sanguinolites naiadiformis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 23, fig. 18. Middle Waverly Group: Granville, Ohio.

Sanguinolites nasutus. See Pomacrus nasutus.

### Sanguinolites nobilis De Koninck.

1885. Sanguinolites nobilis. De Koninck, Fauna du Calc. Carb. de la Belg., pt. 5, p. 81, pl. 16, fig. 7.

1888. Allorisma (Sanguinolites) nobilis. Herrick, Bull. Den. Univ., vol. 3, p. 71, pl. 10, fig. 5.

Waverly Group: Licking County, Ohio.

1888. Allorisma nobilis. Herrick, Bull. Den. Univ., vol. 4, p. 28. Waverly Group: Ohio.

1895. Allorisma nobilis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 23, fig. 20. Middle Waverly Group: Licking County, Ohio.

## Sanguinolites obliquus Meek.

1871. Sanguinolites? obliquus. Meek, Proc. Acad. Nat. Sci. Phil., p. 69. Upper Waverly Group: Rushville and Newark, Ohio.

1875. Sanguinolites? obliquus. Meek, Pal. Ohio, vol. 2, p. 306, pl. 16, figs. 2a, b. Upper Waverly Group: Rushville and Newark, Ohio.

1888. Sanguinolites obliquus. Herrick, Bull. Den. Univ., vol. 3, p. 70.

### Sanguinolites plicata. See Goniophora plicata.

### Sanguinolites randolphensis Worthen.

1883. Cypricardia? Randolphensis. Worthen, Geol. Surv. Ill., vol. 7, p. 326. Chester L. S.: Randolph County, Illinois.

1890. Sanguinolites randolphensis. Worthen, Geol. Surv. Ill., vol. 8, p. 130, pl. 20, figs. 1, 1a.
Chester L. S.: Chester, Illinois.

#### Chester L.S.: Chester, Illinois

#### Sanguinolites retusus Walcott.

1884. Sanguinolites retusus. Walcott, Pal. Enreka Dist., p. 247, pl. 20, fig. 10.

Lower Carboniferous: Eureka listrict, Nevada.

# Sanguinolites salteri Walcott.

1884. Sanguinolites Salteri. Walcott, Pal. Eureka Dist., p. 248, pl. 20, fig. 12.

Lower Carboniferous: Eureka District, Nevada.

### Sanguinolites securis Winchell.

1870. Sauguinolites (Cypricardia?) securis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 255.

Waverly Group: Newark, Ohio.

# Sanguinolites senilis Herrick.

1888. Sanguinolites (Goniophora) šenilis. Herrick, Bull. Den. Univ., vol. 3, p. 66, pl. 9, fig. 28.

Waverly Group: Licking County, Ohio.

# Sanguinolites simplex Walcott.

1884. Sanguinolites simplex. Walcott, Pal. Eureka Dist., p. 248, pl. 20, fig. 11. Lower Carboniferous: Eureka District, Nevada.

#### Sanguinolites striatus Walcott.

1884. Sanguinolites striatus. Walcott, Pal. Eureka Dist., p. 249, pl. 23, fig. 7.
Lower Carboniferous: Eureka District, Nevada.

# Sanguinolites strigatus Winchell.

1865. Sanguinolites strigatus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 127.

Marshall Group: Pointe Aux Barques, Huron County, Michigan.

Sanguinolites sulciferus. See Cypricardinia sulcifera.

# Sanguinolites transversus De Koninck.

1888. Sanguinolites (Sphenotus) transversus. Herrick, Bull. Den. Univ., vol. 3, p. 68, pl. 9, fig. 22.

Waverly Group: Licking County, Ohio.

# Sanguinolites unioniformis Winchell.

1862. Sanguinolites unioniformis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 414.
Marshall Group: Moscow, Michigan.

1888. Sanguinolites unioniformis. Herrick, Bull. Den. Univ., vol. 3, p. 67, pl. 9, figs. 5, 7-9, 24.

Waverly Group: Licking County, Ohio.

# Sanguinolites valvulus. See Sphenotus valvulus.

#### Sanguinolites (species undetermined).

1897. Sanguinolites? sp.? Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 268, pl. 20, fig. 6.

Batesville S. S.: Batesville, Arkansas.

# SCAPHIOURINUS Hall, 1858.

Scaphiocrinus abnormis. See Scytalocrinus abnormis.

Scaphiocrinus ægina. See Decadocrinus ægina.

#### Scaphiocrinus æqualis Hall.

1860. Poteriocrinus aqualis. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, p. 63. Burlington L. S.: Burlington, Iowa.

1861. Poteriocrinus (Scaphiocrinus) solidus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 140.

Burlington L. S.: Burlington, Iowa.

1865. Poleriocrinus (Scaphiocrinus) tenuidactylus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 156.

Burlington L. S.: Burlington, Iowa.

# Scaphiocrinus æqualis Hall-Continued.

1868. Poteriocrinus (Soaphiocrinus) tenuidactylus. Meek and Worthen, Gool. Surv. Ill., vol. 3, p. 490, pl. 18, fig. 10.

Burlington Group: Burlington, Iowa.

See also Woodocrinus aqualis.

# Scaphiocrinus arrosus Miller and Gurley.

1894. Scaphiocrinus arrosus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 39, pl. 6, fig. 5.

Keokuk Group: Washington County, Indiana.

# Scaphiocrinus bayensis. See Decadocrinus bayensis.

# Scaphiocrinus bellus Miller and Gurley.

1890. Scaphiocrinus bellus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 363, pl. 8, figs. 5-7.

Keokuk Group: Bono, Indiana.

# Scaphiocrinus bonoensis Miller and Gurley.

1890. Scaphiocrinus bonoensis. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 349, pl. 5, figs. 6, 7.

Keokuk Group: Bono, Indiana.

# Scaphiocrinus boonvillensis Miller.

1891. Scaphiocrinus Boonvillensis. Miller, Bull. Geol. Surv. Mo., No. 4, p. 37, pl. 5, figs. 1, 2.

Keokuk Group: Boonville, Missouri.

1894. Scaphiocrinus † boonvillensis. Keyes, Mo. Geol. Surv., vol. 4, p. 212. Keokuk L. S.: Boonville, Missouri.

# Scaphiocrinus briærius Worthen.

1882. Poteriocrinus briærius. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 12.

Upper part of geodiferous shales of Keokuk Group: 1 mile below Keokuk, Iowa.

1883. Poteriocrinus briærius. Worthen, Geol. Surv. Ill., vol. 7, p. 279, pl. 27, fig. 4.
Keokuk Group (upper part of geode bed): 1 mile below Keokuk, Iowa.

### Scaphiocrinus burketi Worthen.

1882. Poteriocrinus burketi. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 5.
Top of Keokuk L. S.: Hamilton, Illinois.

1883. Poteriocrinus burketi. Worthen, Geol. Surv. III., vol. 7, p. 270, pl. 28, fig. 8. Keokuk, L. S.: Hamilton, Illinois.

#### Scaphiocrinus calyculus. See Poteriocrinus calyculus.

Scuphiocrinus carbonarius. See Graphiocrinus carbonarius and Ceriocrinus inflexus.

# Scaphiocrinus carinatus Hall.

1861. Scaphiocrinus carinatus. Hall, Desc. New Spec. Crin., p. 8. Burlington L. S.

1861. Scaphiocrinus carinatus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 31°. Burlington L. S.: Burlington, Iowa.

1893. Poteriocrinus (Scaphiocrinus) carinatus. Whitfield, Mem. Am. Nat. Hist., vol. 1, p. 31, pl. 3, figs. 13, 14.
Burlington L. S.: Burlington, Iowa.

# Scaphiocrinus clio Meek and Worthen.

1869. Scaphiocrinus Clio. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 144. Upper Burlington L. S.: Burlington, Iowa.

# Scaphiocrinus clio Meek and Worthen-Continued.

1873. Scaphiocrinus Clio. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 408, pl. 1, fig. 10.

Burlington L. S.: Burlington, Iowa.

# Scaphiocrinus constrictus Miller.

1891. Scaphiocrinus constrictus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 38, pl. 5, figs. 3, 4.

Keokuk Group: Boonville, Mo.

# Scaphiocrinus corevi Meek and Worthen.

1869. Scaphiocrinus Coreyi. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 148. Keokuk Group: Crawfordsville, Indiana.

1873. Scaphiocrinus Coreyi. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 494, pl. 15, fig. 1.

Keokuk Group: Crawfordsville, Indiana.

# Scaphiocrinus corycia Hall.

1864. Poteriocrinus corycia. Hall, 17th Rep. N. Y. State Cab. Nat. Hist., p. 57. Waverly Group: Richfield, Ohio.

1875. Poteriocrinus (Scaphiocrinus?) corycia. Hall and Whitfield, Pal. Ohio, vol. 2, p. 173, pl. 12, fig. 9.
Waverly Group: Richfield, Ohio.

# Scaphiocrinus coxanus Worthen.

1882. Poteriocrinus coxanus. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 4. Upper Keokuk L. S.: Hamilton, Illinois.

1883. Poteriocrinus coxanus. Worthen, Geol. Surv. Ill., vol. 7, p. 269, pl. 27, fig. 1. Keokuk L. S.: Hamilton, Illinois.

# Scaphiocrinus crineus Hall.

1864. Poteriocrinus crincus. Hall, 17th Rep. N. Y. State Cab. Nat. Hist., p. 56. Waverly Group: Richfield, Ohio.

1875. Poteriocrinus crineus. Hall and Whitfield, Pal. Ohio, vol. 2, p. 172, pl. 12, figs. 6, 7.

Waverly Group: Richfield, Ohio.

# Scaphiocrinus cultidactylus Hall.

1861. Poteriocrinus cultidactylus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, p. 62.

Burlington L. S.: Near Hamburg, Illinois.

1883. Poteriocrinus cultidactylus. Worthen, Gool. Surv. Ill., vol. 7, p. 301, pl. 30, fig. 1.

Burlington L. S.: Near Hamburg, Calhoun County, and Montezuma, Pike County, Illinois.

# Scaphiocrinus dactyliformis Hall.

1858. Scaphiocrinus dactyliformis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 670, pl. 17, fig. 6.

St. Louis L. S.: St. Louis, Missouri.

1894. Scaphiocrinus dactyliformis. Keyes, Mo. Geol. Surv., vol. 4, p. 211. St. Louis L. S.: St. Louis, Missouri.

Scaphiocrinus decabrachiatus. See Scytalocrinus decabrachiatus.

Scaphiocrinus decadactylus. See Scytalocrinus decadactylus.

#### Scaphiocrinus delicatus Meek and Worthen.

1869. Scaphiocrinus delicatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 144.

Upper Burlington L. S.: Burlington, Iowa.

# Scaphiocrinus delicatus Meek and Worthen-Continued.

1873. Scaphiocrinus delicatus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 407. pl. 1, figs. 5a, b.

Burlington L. S.: Burlington, Iowa.

# Scaphiocrinus depressus. See Decadocrinus depressus.

# Scapbiocrinus dichotomus Hall.

1858. Scaphiocrinus dichotomus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 553. Burlington L. S.: Quincy, Illinois.

# Scaphiocrinus disparilis Miller and Gurley.

1890. Scaphiocrinus disparilis. Miller and Gurley, 16th Rep. Gool. Surv. Ind., p. 367, pl. 9, fig. 1; pl. 10, fig. 2. Keokuk Group: Crawfordsville, Indiana.

# Scaphiocrinus divaricatus Hall.

1860. Scaphiocrinus diraricatus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. lova, p. 65, pl. 1, fig. 10; pl. 3, fig. 6. Warsaw L. S.: Warsaw, Illinois.

Scaphiocrinus doris. See Poteriocrinus doris.

# Scaphiocrinus elegantulus Wachsmuth and Springer.

1890. Scaphiocrinus elegantulus. Wachsmuth and Springer, Geol. Surv. Ill., vol. 8, p. 195, pl. 17, fig. 13.

Kinderhook Group: Legrand, Iowa.

# Scaphiocrinus extensus Wachsmuth and Springer.

1882. Poteriocrinus asper. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 11. Upper part of geodiferous shales of Keokuk Group: 1 mile below Keokuk,

1883. Poteriocrinus asper. Worthen, Geol. Surv. Ill., vol. 7, p. 278, pl. 27,fig. 8. Keokuk Group (upper part of geode bed): 1 mile below Keokuk, Iowa.

1886. Scaphiocrinus extensus. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil., p. 161. (Rev. Palaeocr. III, p. 237.)

### Scaphiocrinus fiscellus. See Decadocrinus fiscellus.

# Scaphiocrinus gibsoni White.

1878. Scaphiocrinus Gibsoni. White, Proc. Acad. Nat. Sci. Phil., p. 31. Keokuk Group: Crawfordsville, Indiana.

1880. Scaphiocrinus gibsoni. White, Cont. to Inv. Pal., No. 8, p. 161, pl. 40, fig. 4a.

Keokuk Group: Crawfordsville, Indiana.

1881. Scaphiocrinus gibsoni. White, 2d Ann. Rep. Dep. Stat. and Geol. Ind., p. 507, pl. 7, fig. 7.

Keokuk Group: Crawfordsville, Indiana.

# Scaphiocrinus globosus Wachsmuth and Springer.

1890. Scaphiocrinus globosus. Wachsmuth and Springer, Geol. Surv. Ill., vol. 8, p. 196, pl. 17, fig. 8. Kinderhook Group: Legrand, Iowa.

# Scaphiocrinus gorbyi Miller.

1891. Scaphiocrinus gorbyi. Miller, Adv. Sheets 17th Rep. Geol. Surv. Ind., p. 46, pl. 12, fig. 15. Keokuk Group: Boonville, Missouri.

1892. Scaphiocrinus gorbyi. Miller, 17th Rep. Ceol. Surv. Ind., p. 656, pl. 12, fig. 15.

Keokuk Group: Boonville, Missouri.

1894. Scaphiocrinus? gorbyi. Keyes; Mo. Geol Surv., vol. 4, p. 213. Keokuk L. S.: Boonville, Missouri.

# Scaphiocrinus granuliferus Miller and Gurley.

1890. Scaphiocrinus granuliferus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 367, pl. 10, fig. 3.

Keokuk Group: Crawfordsville, Indiana.

# Scaphiocrinus graphicus Miller and Gurley.

1890. Scaphiocrinus graphicus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 366, pl. 10, fig. 4.

Keokuk Group: Crawfordsville, Indiana.

# Scaphiocrinus gurleyi White.

1878. Scaphiocrinus Gurleyi. White, Proc. Acad. Nat. Sci. Phil., p. 32.

Keokuk Group: Crawfordsville, Indiana.

1880. Scaphiocrinus gurleyi. White, Cont. to Inv. Pal., No. 8, p. 162, pl. 40, fig. 3a. Keokuk Group: Crawfordsville, Indiana.

1881. Scaphiocrinus gurleyi. White, 2d Anu. Rep. Dep. Stat. and Geol. Ind., p. 509, pl. 7, fig. 8.

Keokuk Group: Crawfordsville, Indiana.

# Scaphiocrinus halli. See Decadocrinus halli.

Scaphiocrinus hemisphericus. See Ceriocrinus hemisphericus.

Scaphiocrinus hoveyi. See Barycrinus hoveyi.

### Scaphiocrinus huntsvillæ Worthen.

1873. Scaphiocrinus Huntsvilla. Worthen, Geol. Surv. Ill., vol. 5, p. 534, pl. 20, fig. 1.

St. Louis L. S. ?: Near Huntsville, Alabama.

# Scaphiocrinus internodius Hall.

1858. Scaphiocrinus internodius. Hall, Geol. Iowa, vol. 1, pt. 2, p. 679, pl. 25, fig. 2.

Kaskaskia L. S.: Chester, Illinois.

1882. Scaphiocrinus internodius. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 17 (footnote).

St. Louis L. S. (Not Chester, as reported by Hall.)

# Scaphiocrinus iowensis Worthen.

1882. Poteriocrinus iowensis. Worthen, Bull. No. 1, 1ll State Mus. Nat. Hist., p. 6. Upper shales of geode bed, Keokuk Group: 1 mile below Keokuk, Iowa.

1883. Poteriocrinus Iowensis. Worthen, Geol. Surv. Ill., vol. 7, p. 272.

Keokuk Group (upper shales of geode bed): 1 mile below Keokuk, Iowa.

Scaphiocrinus juvenis. See Decadocrinus juvenis.

# Scaphiocrinus kaskaskiensis Worthen.

1882. Poteriocrinus kaskaskiensis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 27.

Chester L. S.: Bluffs of Kaskaskia River, 4 miles above Chester, Illinois.

1883. Poteriocrinus kaskaskiensis Worthen, Geol Surv. Ill., vol. 7, p. 300, pl. 29, fig. 15.

Chester L. S.: Bluffs of Kaskaskia River, 4 miles above Chester, Illinois.

#### Scaphiocrinus keokuk Hall.

1860. Poteriocrinus keokuk. Hall, Supp. vol. 1, pt. 2. Geol. Rep. In., p. 64. Keokuk L. S.: Keokuk, Iowa.

# Scaphiocrinus lacunosus Miller and Gurley.

1890. Scaphiocrinus lacunosus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 363, pl. 8, figs. 8-10

Keokuk Group: Bono, Indiana.

# Scaphiocrinus latidactylus Worthen.

1882. Poteriocrinus latidactylus. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 8.

Upper Keokuk L. S.: Hamilton, Illinois.

1883. Poteriocrinus latidactylus. Worthen, Geol. Surv. Ill., vol. 7, p. 275, pl. 28, fig. 6.

Keckuk L. S.: Hamilton, Illinois.

Scaphiocrinus longidactylus. See Scytalocrinus decabrachiatus.

# Scaphiocrinus lyoni Miller.

1892. Scaphiocrinus lyoni. Miller, Adv. Sheets 18th Rep. Geol. Surv. Ind., p. 45, pl. 5, fig. 25.

Keokuk Group: Three miles east of Crawfordsville, Indiana.

1894. Scaphiocrinus lyoni. Miller, 18th Rep. Geol. Surv. Ind., p. 299, pl. 5, fig. 25. Keokuk Group: Three miles east of Crawfordsville, Indiana.

Scaphiocrinus lyriope. See Decadocrinus lyriope.

Scaphiocrinus macadamsi. See Graphiocrinus macadamsi.

Scaphiocrinus macrodactylus. See Scytalocrinus macrodactylus.

# Scaphiocrinus maniformis Miller.

1892. Scaphiocrinus maniformis. Miller, Adv. Sheets 18th Rep. Geol. Surv. Ind., p. 46, pl. 5, fig. 26.

Keokuk Group: Washington County, Indiana.

1894. Scaphiocrinus maniformis. Miller, 18th Rep. Geol. Surv. Iud., p. 300, pl. 5, fig. 26.

Keokuk Group: Washington County, Indiana.

# Scaphiocrinus manus Miller and Gurley.

1890. Scaphiocrinus manus. Miller and Gurley, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 24, pl. 4, fig. 13.

Keokuk Group: Crawfordsville, Indiana.

1890. Scaphiocrinus manus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 345, pl. 4, fig. 13.

Keokuk Group: Crawfordsville, Indiana.

# Scaphiocrinus martinensis Miller and Gurley.

1894. Scaphiocrinus martinensis. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 38, pl. 4, fig. 9.

Kaskaskia Group: Martin County, Indiana.

# Scaphiocrinus missouriensis Shumard.

1855. Poteriocrinus longidactylus. Shumard, Geol. Rep. Mo., p. 188, pl. B, tigs. 5a-c. (Not S. longidactylus Austin, 1843.)

Upper St. Louis L. S.: St. Louis County, Missouri.

\*1857. Poteriocrinus missouriensis. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 80.

1858. Poteriocrinus missouriensis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 669, pl. 17, figs.

St. Louis L. S.: Near St. Louis, Missouri.

1894. Scaphiocrinus missouriensis. Keyes, Mo. Geol. Surv., vol. 4, p. 211, pl. 26. fig. 2.

St. Louis L. S.: St. Louis, Missouri.

#### Scaphiocrinus montanænsis Meek.

1873. Poteriocrinites Montanaensis. Meek, U.S. Gool. Surv. Mont., Idaho, Wyo., and Utah, p. 469.

Carboniferous: "Old Baldy," near Virginia City, Montana

Bull. 153----35

# Scaphiocrinus montanænsis Meek—Continued.

1880. Poteriocrinus montanaensis. White, Cont. to Inv. Pal., No. 6, p. 128, pl. 33, fig. 6a.

Carboniferous: "Old Baldy" Mountain, near Virginia City, Montana.

# Scaphiocrinus nanus Meek and Worthen.

- 1869. Scaphiocrinus nanus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 141.

  Lower Burlington L. S.: Burlington, Iowa.
- 1873. Scaphiocrinus nanus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 423, pl. 1, fig. 8.

Burlington, L. S.: Burlington, Iowa.

# Scaphiocrinus nauvocensis Worthen.

1882. Poteriocrinus nauvocensis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 13.

Keokuk L. S.: Nauvoo, Illinois.

1883. Poteriocrinus Naurocensis. Worthen, Geol. Surv. Ill., vol. 7, p. 282, pl. 28, fig. 10.

Keokuk L. S.: Nauvoo, Illinois.

#### Scaphiocrinus nodobrachiatus Hall.

- 1861. Scaphiocrinus nodobrachiatus. Hall, Desc. New Spec. Crin., p. 8 Keokuk L. 8.
- 1861. Scaphiocrinus nodobrachiatus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 314. Keokuk, L. S.: Crawfordsville, Indiana.
- 1872. Scaphiocrinus nodobrachiatus. Hall, Photo. Plates of Crinoids, pl. 6, fig. 2.

# Scaphiocrinus norwoodi Meek and Worthen.

1865. Poteriocrinus (Scaphiocrinus) ? Norwoodi. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 158.

St. Louis Group: Hancock County, Illinois.

#### Scaphiocrinus notabilis. See Poteriocrinus notabilis.

# Scaphiocrinus notatus Miller and Gurley.

1896. Scaphiocrinus notatus. Miller and Gurley, Bull. No. 9, Ill. State Mus. Nat. Hist., p. 34, pl. 2, figs. 25, 26.

Kinderbook Group: Legrand, Iowa.

# Scaphiocrinus obscurus Wachsmuth and Springer.

1882. Poteriocrinus tenuidactylus. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 6. (Not S. tenuidactylus M. & W. 1865.)

Upper part of geode bed, Keokuk Group: 1 mile below Keokuk, Iowa.

1883. Poteriocrinus tennidactylus. Worthen, Geol. Surv. Ill., vol. 7, p. 271, pl. 28, fig. 13.

Keokuk Group (geode bed): 1 mile below Keokuk, Iowa.

1886. Scaphiocrinus obscurus. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil., p. 160. (Rev. Palæocr. III, p. 236.)

# Scaphiocrinus occidentalis Worthen.

1882. Poteriocrinus occidentalis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 10.

Upper Keokuk L. S.: Hamilton, Illinois.

1883. Poteriocrinus occidentalis. Worthen, Geol. Surv. Ill., vol. 7, p. 278, pl 27, fig. 2.

Keokuk L. S.: Hamilton, Illinois.

### Scaphiocrinus okawensis Worthen.

1882. Poteriocrinus okawensis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 24.

Chester L. S.: Bluffs of Okaw River, above Chester, Illinois.

1883. Poteriocrinus Okawensis. Worthen, Geol. Surv. Ill., vol. 7, p. 296, pl. 29, fig. 2. Chester L. S.: Bluffs of Okaw River, above Chester, Illinois.

Scaphiocrinus orbicularis. See Eupachycrinus orbicularis.

### Scaphiocrinus orestes Worthen.

- 1882. Poteriocrinus orestes. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 7.
  Top of geodiferous shales of Keokuk Group: 1 mile below Keokuk, Iowa.
- 1883. Poteriocrinus Orestes. Worthen, Geol. Surv. Ill., vol. 7, p. 273, pl. 27, fig. 3. Keokuk Group (top of geode bed): 1 mile below Keokuk, Iowa.

# Scaphiocrinus penicillus Meek and Worthen.

- 1869. Scaphiocrinus penicillus. Meek and Worthen, Proc. Acad. Nat. Scj. Phil., p. 142.
  - Upper Burlington L.S.: Burlington, Iowa.
- 1873. Scaphiocrinus penicillus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 414, pl. 2, fig. 7.
  Burlington L. S.: Burlington, Iowa.

# Scaphiocrinus pikensis Worthen.

- 1882. Zeacrinus pikensis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 29. Lower Burlington L. S.: Montezuma, Pike County, Illinois.
- 1883. Zeacrinus Pikensis. Worthen, Geol. Surv. Ill., vol. 7, p. 304, pl. 30, fig. 3. Burlington L. S.: Montezuma, Pike County, Illinois.

# Scaphiocrinus popensis Worthen.

- 1882. Poteriocrinus popensis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 23. Chester L. S.: Pope County, Illinois.
- 1883. Poteriocrinus Popensis. Worthen, Geol. Surv. Ill., vol. 7, p. 296, pl. 29, fig. 12. Chester L. S.: Pope County, Illinois.

# Scaphiocrinus porrectus Miller.

- 1891. Scaphiocrinus porrectus. Miller, Adv. Sheets, 17th Rep. Gool. Surv. Ind., p. 42, pl. 7, fig. 2.
  - Keokuk Group: Crawfordsville, Indiana.
- 1892. Scaphiocrinus porrectus. Miller, 17th Rep. Geol. Surv. Ind., p. 652, pl. 7, fig. 2. Keokuk Group: Crawfordsville, Indiana.

# Scaphiocrinus præmorsus Miller and Gurley.

- 1890. Scaphiocrinus præmorsus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 364, pl. 8, fig. 11.
  - Keokuk Group: Washington County, Indiana.

### Scaphiocrinus proboscidialis Worthen.

- 1875. Poteriocrinus proboscidialis. Worthen, Geol. Surv. Ill., vol. 6, p. 518, pl. 31, fig. 1.
  - St. Louis L. S.: Carondelet, Missouri.
- 1894. Scaphiocrinus proboscidialis. Keyes, Mo. Geol. Surv., vol. 4, p. 212. St. Louis L. S.: Carondelet, Missouri.

# Scaphiocrinus propinquus Worthen.

- 1882. Poleriocrinus propinquas. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 26.
  - Chester L. S.: Monroe County, Illinois.
- 1883. Poteriocrinus propinquus. Worthen, Geol. Surv. Ill., vol. 7, p. 209, pl. 29, fig. 9.
  - Chester L. S.: Monroe County, Illinois.

#### Scaphiocrinus ramulosus Hall.

- 1861. Scaphiocrinus ramulosus. Hall, Desc. New Spec Crin., p. 7. Burlington L. S.
- 1861. Scaphiocrinus ramulosus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 307. Burlington L. S.: Burlington, Iowa.

# Scaphiocrinus randolphensis Worthen.

1873. Scaphiocrinus Randolphensis. Worthen, Geol. Surv. Ill., vol. 5, p. 551, pl. 21, fig. 14.

Chester Group: Chester, Illinois.

# Scaphiocrinus repertus Miller and Gurley.

1890. Scaphicorinus repertus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 362, pl. 8, figs. 1, 2.

Keokuk Group: Bono, Indiana.

Scaphiocrinus robustus. See Scytalocrinus robustus.

Scaphiocrinus rudis. See Graphiocrinus rudis.

# Scaphiocrinus rusticellus White.

1862. Scaphiocrinus rusticellus. White, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 505. Burlington L. S.: Burlington, Iowa.

1894. Scaphiocrinus rusticellus. Keyes, Mo. Geol. Surv., vol. 4, p. 212, pl. 26, fig. 1. Lower Burlington L. S.: Hannibal, Missouri; Burlington, Iowa.

# Scaphiocrinus salteri Worthen.

1882. Poteriocrinus salteri. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 21. Chester L. S.: Chester, Illinois.

1883. Poteriocrinus Salteri. Worthen, Geol. Surv. Ill., vol. 7, p. 291, pl. 29, fig. 18. Chester L. S.: Chester, Illinois.

# Scaphiocrinus sampsoni Miller.

1891. Scaphiocrinus sampsoni. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 46, pl. 9, fig. 12.

Chouteau L. S.: Pettis County, Missouri.

1892. Scaphiocrinus sampsoni. Miller, 17th Rep. Geol. Surv. Ind., p. 656, pl. 9, fig. 12.

Chouteau L. S.: Pettis County, Missouri.

1894. Scaphiocrinus? sampsoni. Keyes, Mo. Geol. Surv., vol. 4, p. 213 Chouteau L. S.: Sedalia, Missouri.

Scaphiocrinus scalaris. See Decadocrinus scalaris.

# Scaphiocrinus scoparius Hall.

1858. Scaphicorinus scoparius. Hall, Geol. Iowa, vol. 1, pt. 2, p. 680, pl. 25, figs. 3a, b.

Kaskaskia L. S.: Chester, Illinois.

1882. Scaphiocrinus scoparius. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 17 (footnote).
St. Louis L. S. (not Chester as reported by Hall).

1894. Scaphiocrinus scoparius. Keyes, Mo. Geol. Surv., vol. 4, p. 212. Kaskaskia L. S.: Chester, Illinois.

#### Scaphiocrinus sculptus Worthen.

1882. Poteriocrinus sculptus. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 21. Chester L. S.: Monroe County, Illinois.

1883. Poteriocrinus sculptus. Worthen, Geol. Surv. Ill., vol. 7, p. 292, pl. 29, fig. 8. Chester L. S.: Monroe County, Illinois.

Scaphiocrinus simplex. See Graphiocrinus simplex.

# Scaphiocrinus spinifer Wetherby.

1880. Scaphiocrinus spinifer. Wetherby, Jour. Cinn. Soc. Nat. Hist., vol. 3, p. 157, pl. 5, fig. 3.

Kaskaskia Group: Pulaski County, Kentucky.

Scaphiocrinus spinobrachiatus Hall. See Graphiocrinus spinobrachiatus.

### Scaphiocrinus spinobrachiatus Worthen.

1882. Poteriocrinus spinobrachiatus. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 20.

Chester L. S.: Monroe County, Illinois.

1883. Poteriocrinus spinobrachiatus. Worthen, Geol. Surv. Ill., vol. 7, p. 290, pl. 29, fig. 1.

Chester L. S.: Monroe County, Illinois.

### Scaphiocrinus spinosus Owen and Shumard.

1852. Poteriocrinus spinosus. Owen and Shumard, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 91, pl. 11, fig. 4.

Carboniferous L. S.: Kaskaskia, Illinois; Grayson County, Kentucky.

1852. Poteriocrinus spinosus. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 596, tab. 5B, fig. 4.

Carboniferous L. S.: Kaskaskia, Illinois.

### Scaphiocrinus striatus. See Graphiocrinus striatus.

# Scaphiocrinus subcarinatus Hall.

1864. Scaphiocrinus subcarinatus. Hall, 17th Rep. N. Y. State Cab. Nat. Hist., p. 58. Waverly Group: Richfield, Ohio.

1875. Scaphiocrinus subcarinatus. Hall and Whitfield, Pal. Ohio, vol. 2, p. 176, pl. 12, figs. 13, 14.

Waverly Group: Richfield, Ohio.

### Scaphiocrinus subimpressus Meek and Worthen.

1861. Scaphiocrinus sub-impressus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 138.

Burlington L. S.: Burlington, Iowa.

1868. Poteriocrinus subimpresus. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 485, pl. 18, flgs. 1a, b.

Burlington Group: Burlington, Iowa.

# Scaphiocrinus subtortuosus. See Decadocrinus subtortuosus.

# Scaphiocrinus subtumidus Meek and Worthen.

1865. Poteriocrinus (Scaphiocrinus) subtumidus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 159.

Chester Group: Bay City, Pope County, Illinois.

#### Scaphiocrinus swallovi Meek and Worthen.

·1860 Poteriocrinus Swallori. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 394.

Burlington L. S.: Burlington, Iowa.

1866. Poteriocrinus Swallovi. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 183, pl. 16, figs. 4a, b.

Burlington L. S.: Burlington, Iowa.

1881. Poteriocrinus Jesupi. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 7, pls. 1, 2.

Burlington L. S.: Burlington, Iowa.

1882. Poteriocrinus subramulosus. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 14.

Keokuk L. S : Keokuk, Iowa.

1883. Poteriocrinus subramulosus. Worthen, Geol. Surv. Ill., vol. 7, p. 284, pl. 27, fig. 6.

Keokuk L. S.: Keokuk, Iowa.

# Scaphiocrinus tethys Meek and Worthen.

1869. Scaphiocrinus Tethys. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 143. Upper Burlington L. S.: Burlington, Iowa.

# Scaphiocrinus tethys Meek and Worthen-Continued.

1873. Scaphiocrinus Tethys. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 419, pl. 2, fig. 13.

Burlington L. S.: Burlington, Iowa.

Scaphiocrinus tortuosus. See Graphiocrinus tortuosus.

# Scaphiocrinus unicus Hall.

1861. Scaphiocrinus unicus. Hall, Desc. New Spec. Crin., p. 8. Keokuk L. S.

1861. Scaphiocrinus unicus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 313. Keokuk L. S.: Crawfordsville, Indiana.

1872. Scaphiocrinus unicus. Hall, Photo. Plates of Crinoids, pl. 6, fig. 6.

1873. Scaphiocrinus unicus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 493, pl. 15, fig. 5.
Keokuk Group: Crawfordsville, Indiana.

1875. Scaphiocrinus unious. Meek and Worthen, Geol. Surv. Ill., vol. 6, p. 519, pl. 29, fig. 1.

Keokuk Group: Crawfordsville, Indiana.

# Scaphiocrinus varsoviensis Worthen.

1882. Poteriocrinus varsouviensis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 19.

Warsaw beds: Warsaw, Illinois.

1883. Poteriocrinus Varsoviensis. Worthen, Geol. Surv. Ill., vol. 7, p. 290, pl. 28, fig. 15.

Warsaw beds: Warsaw, Illinois.

# Scaphiocrinus venustus Worthen.

1882. Poteriacrinus vonustus. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 24.

Chester L. S.: Monroe County, Illinois.

1882. Poteriorinus olytis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 25. Chester L. S.: Monroe County, Illinois.

1883. Poteriocrinus venustus. Worthen, Geol. Surv. Ill., vol. 7, p. 297, pl. 29, fig. 13. Chester L. S.: Monroe County, Illinois.

1883. Poteriocrinus peculiaris. Worthen, Geol. Surv. Ill., vol. 7, p. 298, pl. 29, fig. 10.

Chester L. S.: Monroe County, Illinois.

Scaphiocrinus wachsmuthi. See Graphiocrinus wachsmuthi.

Scaphiocrinus whitei. See Poteriocrinus whitei.

# SCHIZOBLASTUS Etheridge and Carpenter, 1882.

# Schizoblastus granulosus Meek and Worthen.

1865. Pentremites (Granatocrinus?) granulosus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 165.

Keokuk Group: Warsaw, Illinois.

1873. Granatocrinus granulosus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 508, pl. 15, fig. 10.

Keokuk Group: Near Warsaw, Illinois.

# Schizoblastus lotoblastus White.

1874. Granatocrinus lotoblastus. White, Prelim. Rep. Inv. Foss., p. 15. Subcarboniferous: Ewell's Spring, Arizona.

1879. Granatocrinus lotoblastus. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 80, pl. 5, figs. 3a, b.

Subcarboniferous: Ewell's Spring, Arizona.

#### Schizoblastus lotoblastus White—Continued.

1879. Granatocrinus lotoblastus? White, Bull. U. S. Geol. and Geog. Surv. Terr., vol. 5, p. 212.

Carboniferous: Teton range, near the headwaters of Teton River, just west of the common boundary of Idaho and Wyoming.

#### Schizoblastus melonoides Meek and Worthen.

1869. Granatocrinus melonoides. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 88.

Upper Burlington L. S.: Burlington, Iowa.

1873. Granatocrinus melonoides. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 468, pl. 9, fig. 1.

Burlington L. S.: Burlington, Iowa.

1886. Schizoblastus melonoides. Etheridge and Carpenter, Cat. Blast., p. 226, pl. 6, figs. 15, 16.

Upper Burlington L. S.: Burlington, Iowa.

1894. Schizoblastus melonoides. Keyes, Mo. Geol. Surv., vol. 4, p. 138. Upper Burlington L. S.: Louisiana and Hannibal, Missouri.

# Schizoblastus potteri Hambach.

1880. Pentremites Potteri. Hambach, Trans. St. Louis Acad. Sci., vol. 4, p. 156, pl. B, fig. 4.

Burlington L. S.: Burlington, Iowa,

# Schizoblastus roemeri Shumard.

1855. Pentremites Roemeri. Shumard. Geol. Rep. Mo., p. 186, pl. B, figs. 2a-d. Chemung Group: Providence, Boone County, Missouri.

1894. Schizoblastus? roemeri. Keyes, Mo. Geol. Surv., vol. 4, p. 137. Chouteau L. S.: Sedalia and Providence, Missouri.

# Schizoblastus sampsoni Hambach.

1884. Pentremites Sampsoni. Hambach, Trans. St. Louis Acad. Sci., vol. 4, p. 551, pl. D, figs. 2, 2a.

Chouteau L. S.: Pettis County, Missouri.

# Schizoblastus savi Shumard.

1855. Pentremites Sayi. Shumard, Geol. Surv. Mo., p. 185, pl. B, figs. 1a-d. Base of Encrinital L. S.: Boone, Marion, Jefferson, St. Louis, and Ste. Genevieve counties, Missouri.

1886. Schizoblastus Sayi. Etheridge and Carpenter, Cat. Blast., p. 224, pl. 3, figs. 1-3; pl. 6, fig. 18; pl. 10, fig. 17; pl. 17, fig. 1.
Upper Burlington L. S: Burlington, Iowa.

1894. Schizoblastus sayi. Keyes, Mo. Geol. Surv., vol. 4, p. 138, pl. 18, figs. 9a, b. Burlington L. S.: Ash Grove, Louisiana, Hannibal, Helton, Palmyra, and Ste. Genevieve, Missouri.

# SCHIZODUS King, 1844.

# Schizodus æqualis Hall.

1885. Schizodus æqualis. Hall, Pal. N. Y., vol. 1, pt. 1, p. 459, pl. 75, fig. 35; pl. 95, fig. 29.

Waverly S. S.: Granville, Licking County, Ohio.

1888. Schizodus chemungensis var. f aequalis. Herrick, Bull. Den. Univ., vol. 3, p. 64, pl. 1, fig. 25.

Waverly Group: Licking County, Ohio.

#### Schizodus affinis Herrick.

1887. Schizodus affinis. Herrick, Bull. Den. Univ., vol. 2, p. 41, pl. 4, figs. 22, 22a, Coal Measures: Flint Ridge, Ohio.

# Schizodus alpina Hall.

- 1858. Dolabra? alpina. Hall, Geol. Iowa, vol. 1, pt. 2, p. 716, pl. 29, fig. 2. Lower Coal Measures: Alpine Dam, Iowa.
- 1891. Schizodus alpina. Keyes, Proc. Acad. Nat. Sci. Phil., p. 249.
  Lower Coal Measures: Des Moines, Iowa.

# Schizodus amplus Meek and Worthen.

- 1870. Schizodus amplus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 41. Coal Measures: Seaville, Fulton County, Illinois.
- 1873. Schizodus amplus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 579, pl. 27, fig. 6.
  - Coal Measures: Seaville, Fulton County, Illinois.
- 1897. Schizodus conf. amplus. Smith, Proc. Am. Phil. Soc., vol. 35, p. 36. Lower Coal Measures: White County, Arkansas.

# Schizodus batesvillensis Weller.

1897. Schizodus batesvillensis. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 266, pl. 19, figs. 8, 9.

Batesville S. S.: Batesville, Arkansas.

Schizodus chemungensis. See Schizodus prolongatus.

Schizodus chemungensis var. æqualis. See Schizodus æqualis.

# Schizodus chesterensis Meek and Worthen.

- 1860. Schizodus Chesterensis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 457. Upper Chester L. S.: Chester, Illinois.
- 1866. Schizodus chesterensis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 301, pl. 23, figs. 6a, b.

Chester Group: Chester, Illinois.

1891. Schizodus Chesterensis. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 587, pl. 14, fig. 4.

Maxville L. S.: Maxville, Ohio.

1895. Schizodus Chesterensis. Whitfield, Geol. Surv. Ohio, vol. 7, p. 474, pl. 10, fig. 4.

Maxville L. S.: Maxville, Ohio.

# Schizodus circulus Worthen.

- 1884. Schizodus 7 circulus. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 11.
  Oolite beds of St. Louis L. S.: Monroe County, Illinois.
- 1890. Schizodus? circulus. Worthen, Ceol. Surv. Ill., vol. 8, p. 109, pl. 19, fig. 1. St. Louis L. S. (colite): Monroe County, Illinois.

#### Schizodus cuneatus Meek.

- 1875. Schizodus cuneatus. Meek, Pal. Ohio, vol. 2, p. 336, pl. 20, fig. 7 Lower Coal Measures: Putnam Hill and Flint Ridge, Ohio.
- 1884. Schizodus cuncatus. Walcott, Pal. Eureka Dist., p. 252, pl. 20, fig. 8. Lower Carboniferous: Eureka District, Nevada.
- 1886. Schizodus cuncatus? Heilprin, 2d Geol. Surv. Penn., Ann. Rep. for 1885, p. 456, fig. 9a; p. 442, fig. 9.
  - Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.
- 1886. Schizodus cuneatus? Heilprin, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 275, fig. 9.
  Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Penusylvania.
- 1887. Schizodus cuneatus (†) Herrick, Bull. Den. Univ., vol. 2, p. 42, pl. 4, fig. 23. Coal Measures: Flint Ridge, Ohio
- 1897. Schi-odus cuneatus. Smith, Proc. Am. Phil. Soc., vol. 35, p. 35.
  Upper Coal Measures: Crawford County, Arkansas.
  Lower Coal Measures: Conway County, Arkansas.

#### Schizodus cuneus Hall.

\* 1883. Cytherodon (Schizodus) cuneus. Hall, Pal. N. Y., vol. 5, pt. 1. Plates and Explanations, pl. 75, figs. 29, 30.

Waverly S. S.: Granville, Licking County, Ohio.

1885. Schizodus cuneus. Hall, Pal. N. Y., vol. 5, pt. 1, p. 458, pl. 75, figs. 29, 30. Waverly S. S.: Granville, Licking County, Ohio.

1888. Schizodus cuneus. Herrick, Bull. Den. Univ., vol. 3, p. 65, pl. 5, fig. 15. Waverly Group: Licking County, Ohio.

1895. Schizodus coneus. Herrick, Geol. Surv. Ohio, vol. 7, pl. 21, fig. 15. Kinderhook: Ohio.

#### Schizodus curtiformis Walcott.

1884. Schizodus curtiforme. Walcott, Pal. Eureka Dist., p. 253, pl. 22, figs. 3-3a. Lower Carboniferous: Eureka District, Nevada.

### Schizodus curtus Meek and Worthen.

\* 1866. Schizodus curtus. Meek and Worthen, Proc. Chicago Acad. Sci., vol. 1, p. 18.

1872. Schizodus ourtus? Meek, U. S. Geol. Surv. Nebr., p. 208, pl. 10, figs. 13a-c. Upper Coal Measures: Nebraska City, Nebraska; Wabash Cut-off, Illinois; Atchison, Kansas.

Lower Coal Measures: Illinois.

1873. Schizodus curtus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 582, pl. 26, fig. 16.

Coal Measures: Wabash Cut-off near New Harmony, Indiana; Fulton County, Illinois.

1887. Schizodus curtus. Herrick, Bull. Den. Univ., vol. 2, p. 42, p. 145, pl. 14, fig. 20. Coal Measures: Flint Ridge, Ohio.

1894. Schizodus † curtus. Keyes, Mo. Geol. Surv., vol. 5, p. 124. Upper Coal Measures: Kansas City, Missouri.

# Schizodus deparcus Walcott.

1884. Schizodus deparcus Walcott. Pal. Eureka Dist., p. 252, pl. 22, fig. 5. Lower Carboniferous; Eureka District, Nevada.

### Schizodus depressus Worthen.

1884. Schizodus depressus. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 11. Oolite bed of St. Louis L. S.: Monroe County, Illinois.

1890. Schizodus depressus. Worthen, Geol. Surv. Ill., vol. 8, p. 109, pl. 18, figs. 8, 8a. St. Louis L. S. (colite): Monroe County, Illinois.

1897. Schizodus depressus (?) Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 267, pl. 20, figs. 7, 8.

Batesville S. S.: Batesville, Arkansas.

### Schizodus harii Miller.

1891. Schizodus harii. Miller, Adv. Sheets, 17th Rep. Gool. Surv. Ind., p. 91, pl. 20, figs. 1-3.

Coal Measures: Kansas City, Missonri.

1892. Schizodus harii. Miller, 17th Rep. Geol. Surv. Ind., p. 701, pl. 20, figs. 1 3. Coal Measures: Kansas City, Missouri.

1894. Schizodus harii. Keyes, Mo. Geol. Surv., vol. 5, p. 123, pl. 46, fig. 4. Upper Coal Measures: Kansas City, Missouri.

#### Schizodus harlamensis Herrick.

1888. Schizodus harlamensis. Herrick, Bull. Den. Univ., vol. 4, p. 117, pl. 6, fig. 3. Waverly Group: 1 mile east of Harlam, Delaware County, Ohio.

1895. Schizodus harlemensis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 17, fig. 3.
Lower Cuyahoga Shale: Near Harlem, Delaware County, Ohio.

### Schizodus magnus Worthen.

1884. Schizodus magnus. Worthen, Bull. No. 2, Ill. State Mus. Nut. Hist., p. 4. Chester L. S.: Randolph County, Illinois.

### Schizodus magnus Worthen—Continued.

1890. Leptodomus? magnus. Worthen, Gool. Surv. Ill., vol. 8, p. 107, pl. 18, fig. 2. Chester L. S: About 2 miles below mouth of Mary's River, Randolph County, Illinois.

# Schizodus medinænsis Meek. •

- 1871. Schizodus medinaensis. Meek, Proc. Acad. Nat. Sci. Phil., p. 165. Waverly Group: Medina, Ohio.
- 1375. Schizodus Medinaensis. Meek, Pal. Ohio, vol. 2, p. 299, pl. 15, figs. 1a-c. Waverly Group: Medina, Ohio.
- 1886. Schizodus medinensis. Claypole, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p, 249.

Lower Coal Measures: Wilkesbarre, Pennsylvania.

1888. Schizodus mediuensis. Herrick, Bull. Den. Univ., vol. 3, p. 65, pl. 1, fig. 16; pl. 2, fig. 6.

Waverly Group: Licking County, Ohio.

# Schizodus mooresi Miller.

1889. Schizodus mooresi. Miller, N. A. Geol. and Pal., p. 511, figs. 918, 919. Coal Measures: Carbon Hill, Hocking Valley, Ohio.

#### Schizodus nauvocensis Worthen.

1884. Schizodus naurocensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist.,

Keokuk L. S.: Nauvoo, Illinois.

1890. Schizodus nauvocensis. Worthen, Geol. Surv. Ill., vol. 8, p. 108, pl. 20, fig. 3. Keokuk L. S.: Nauvoo, Illinois.

#### Schizodus newarkensis Herrick.

- 1888. Schizodus newarkensis. Herrick, Bull. Den. Univ., vol. 3, p. 64, pl. 10, fig. 1. Waverly Group: Licking County, Ohio.
- 1888. Schizodus newarkensis. Herrick, Bull. Den. Univ., vol. 4, p. 36, pl. 6, fig. 6. Waverly Group: Newark, Ohio.
- 1895. Schizodus newarkensis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 17, fig. 6. Burlington Group: Newark, Ohio.

# Schizodus obscurus. See Schizodus wheeleri.

#### Schizodus ovatus Meek and Havden.

- 1858. Axinus (Schizodus) ovatus. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., Upper Coal Measures: Cottonwood Creek, Kansas.
- 1864. Schizodus oratus. Meek and Hayden, Pal. Up. Mo., p. 59, pl. 2, figs. 11a, b. Permian: South Cottonwood Creek, Kansas.

# Schizodus palæoneiliformis Herrick.

- 1888. Schizodus (Protoschizodus) palaconeiliformis. Herrick, Bull. Den. Univ., vol. 3, p. 96, pl. 12, fig. 44.
- Waverly Group: Licking County, Ohio. 1888. Schizodus palaconeiliformis. Herrick, Bull. Den. Univ., vol. 4, pl. 6, fig. 2.
- Waverly Group: Ohio.
- 1895. Schizodus palaeoniliformis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 17, fig. 2. Kinderhook Freestone: Licking County, Ohio.

# Schizodus perelegans Meek and Worthen.

- 1870. Schizodus (Prisconaia) perelegans. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 42.
  - Coal Measures: Danville, Illinois.
- 1873. Schizodus (Prisconia) perelegans. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 581, pl. 26, fig. 19.
  - Coal Measures: Near Danville, Illinois.

### Schizodus pintoensis Walcott.

1884. Schizodus Pintöensis. Walcott, Pal. Eureka Dist., p. 253, pl. 22, figs. 2-2s.
Lower Carboniferous: Eureka District, Nevada.

# Schizodus prolongatus Herrick.

1888. Schizodus chemungensis. Herrick, Bull. Den. Univ., vol. 3, pl. 9, fig. 20. (Not S. chemungensis Con. 1842.)

Waverly Group: Licking County, Ohio.

1888. Schizodus (chemungensis, var.) prolongatus. Herrick, Bull. Den. Univ., vol. 4, p. 36, pl. 6, fig. 1.
Waverly Group: Granville, Ohio.

1895. Schizodus prolongatus. Herrick, Geol. Surv. Ohio, vol. 7, pl. 17, fig. 1. Cuyahoga Shale: Licking County, Ohio.

# Schizodus quadrangularis Hall.

\*1870. Schizodus quadrangularis. Hall, Prelim. Not. Lamell., 2, p. 96. Chemung Group: New York.

1885. Schizodus Chemungensis var. quadrangularis. Hall, Pal. N. Y., vol. 5, pt. 1, p. 454, pl. 75, figs. 31-34, 36.
Chemung Group: New York.

1886. Schizodus quadrungularis. Claypole, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, pp. 243 and 249.
Lower Coal Measures: Wilkesbarre, Pennsylvania.

1888. Schizodus quadrangularis. Herrick, Bull. Den. Univ., vol. 4, pl. 6, fig. 12. Waverly Group: Ohio.

1895. Schizodus quadrangularis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 17, fig. 12. Kinderhook: Granville, Ohio.

# Schizodus randolphensis Worthen.

1890. Schizodus randolphensis. Worthen, Geol. Surv. Ill., vol. 8, p. 110, pl. 20, fig. 12.

Chester L. S.: Chester, Illinois.

#### Schizodus rossicus de Verneuil.

1858. Schizodus Rossicus. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 193. Upper Permian: Near Smoky Hill Fork, Kansas.

1866. Schizodus Rossicus. Geinitz, Carb. und Dyas in Neb., p. 18, tab. 1, figs. 28, 29. Nebraska City, Nebraska.

1873. Schizodus Rossicus? Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 26, figs. 17a-e, 18.

Coal Measures.

1874. Schizodus Rossicus. Meek, Am. Jour. Sci. (3), vol. 7, p. 580.

# Schizodus sedaliensis Miller and Gurley.

1896. Schizodus sedaliensis. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 17, pl. 2, figs. 15, 16. Chouteau L. S.: Sedalia, Missouri.

# Schizodus spellmani Herrick.

1887. Schizodus (?) spellmani. Herrick, Bull. Den. Univ., vol. 2, p. 42, pl. 3, fig. 14. Coal Measures: Flint Ridge, Ohio.

### Schizodus subcircularis Herrick.

1887. Schizodus sub-circularis. Herrick, Bull. Den. Univ., vol. 2, p. 41, pl. 4, fig. 24; p. 145, pl. 14, fig. 18.
Coal Measures: Flint Ridge, Ohio.

# Schizodus subtrigonalis Meek.

1871. Schizodus subtrigonalis. Meek, Proc. Acad. Nat. Sci. Phil., p. 166. Waverly Group: Wooster, Ohio.

# Schizodus symmetricus Calvin.

1890. Schizodus symmetricus. Calvin, Bull. Lab. Nat. Hist., State Univ. Iowa, vol. 1, p. 176, pl. 2, figs. 3a, b.

Upper Coal Measures: Braddyville, Iowa.

# Schizodus triangularis Swallow.

1858. Schizodus triangularis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 193. Lower Permian: Valley of Cottonwood, Kansas.

# Schizodus triangularis Herrick.

1888. Macrodon † † triangularis. Herrick, Bull. Den. Univ., vol. 3, p. 74, pl. 8, fig. 8.

Waverly Group: Licking County, Ohio.

1888. Schizodus triangularis. Herrick, Bull. Den. Univ., vol. 4, p. 116, pl. 6, figs. 10, 13.

Middle Waverly Group: Ohio.

1895. Schizodus triangularis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 17, figs. 10, 13. Kinderhook: Granville, Ohio.

#### Schizodus ulrichi Worthen.

1890. Schizodus ulrichi. Worthen, Geol. Surv. Ill., vol. 8, p. 110, pl. 21, figs. 1-1b; pl. 20, fig. 9.

Upper Coal Measures: Fairfield, Wayne County, Illinois.

#### Schizodus varsoviensis Worthen.

1884. Schizodus rarsoviensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 10.

Upper Keokuk L. S.: Warsaw, Illinois.

1890. Schizodus rarsoriensis. Worthen, Geol. Surv. Ill., vol. 8, p. 107, pl. 19, fig. 7. Keokuk L. S.: Warsaw, Illinois.

#### Schizodus wheeleri Swallow.

1858. Schizodus obscurus. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 193. (Not Axinus obscurus Sowerby, 1823.)
Lower Perminn: Kansas.

1863. Cypricardia (f) Wheeleri. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 96.
Upper Coal Measures: Caldwell County, Missouri.

1866. Sohizodus obscurus. Geiuitz, Carb. und Dyas in Neb., p. 20, tab. 1, figs. 30, 31. Nebraska City, Nebraska.

1872. Schizodus Wheeleri. Meek, U. S. Geol. Surv. Neb., p. 209, pl. 10, figs. 1a-f. Upper Coal Measures: Caldwell County, Missouri; Nebraska City, Nebraska; Adams and Union counties, Iowa. Coal Measures: Illinois.

1876. Schizodus Wheeleri. White, Powell's Rep. Geol. Uinta Mts., p. 91.

Lower Aubrey Group: Confluence of Grand and Green rivers, Utah.

1877. Schizodus Wheeleri. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 154, pl. 11, figs. 6a, b.
Carboniferous: Near Bear Spring, Camp Wingste, New Mexico.

1884. Schizodus Wheeleri. White, 13th Rep. Geol. Surv. Ind., p. 147, pl. 30, figs. 3-5.
Coal Measures: Indiana (†).

1886. Schizodus Wheeleri. Heilprin, 2d Geol. Surv. Penn., Cum. Rep. for 1885, p. 456, p. 442, fig. 7.
 Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.

1886. Schizodus Wheeleri. Heilprin, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 275, p. 270, fig. 7, p. 274, fig. 7a.

Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.

1887. Schizodus wheeleri. Herrick, Bull. Den. Univ., vol. 2, p. 42, pl. 3, fig. 15. Coal Measures: Flint Ridge, Ohio.

#### Schizodus wheeleri Swallow—Continued.

- 1894. Schizodus wheeleri. Keyes, Mo. Geol. Surv., vol. 5, p. 123, pl. 46, figs. 3a-c. Upper Coal Measures: Kansas City, Missouri.
- 1897. Schizodus wheeleri. Smith, Proc. Am. Phil. Soc., vol. 35, p. 36, pl. 22, fig. 4. Lower Coal Measures: Conway County, Arkansas.

# Schizodus (species undetermined).

- 1866. Schizodus —— (sp. ?) Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 345, pl. 27, fig. 6.
  - Upper Coal Measures: North branch of Saline Creek, Gallatin County, Illinois.
- 1872 Schizodus, undt. Meek, U. S. Geol. Surv. Nebr., p. 210, pl. 10, fig. 2.
  Upper Coal Measures: Nebraska City, Nebraska.
- 1887. Schlzodus. Herrick, Bull. Den. Univ., vol. 2, pl. 14, fig. 19. Coal Measures: Flint Ridge, Ohio.
- 1888. Schizodus (sp. und.) Keyes, Proc. Acad. Nat. Sci. Phil., p. 233. Lower Coal Measures: Des Moines, Iowa.
- 1897. Schizodust sp. Weller, Trans. N. Y. Acad. Sci., vol. 16. p. 267, pl. 19, fig. 5. Batesville S. S.: Batesville, Arkansas.

# SCHIZOPHORIA King, 1850.

# Schizophoria resupinata Martin.

1877. Orthis resupinata? Hall and Whitfield, U.S. Geol. Expl. 40 Par., vol. 4, p. 265, pl. 5, figs. 1, 2.

Lower Carboniferous L. S.: Dry Canyon, Oquirrh Mountains, Utah.

### Schizophoria resupinoides Cox.

- 1857. Orthis resupinoides. Cox, Geol. Surv. Ky., vol. 3, p. 570, pl. 9, figs. 1-1b.
  Coal Measures: Hawesville, Hancock County, Kentucky.
- 1881. Orthis resupinoides? White, U. S. Geog. Surv. W. 100 Merid., vol. 3, Supp., Appendix, p. xxiii, pl. 3, figs. 2a, b. Carboniferous: Manuelitos Creek, New Mexico.
- 1890. Orthis resupinoides. Worthen, Geol. Surv. Ill., vol. 8, p. 106, pl. 11, figs. 4a, b.

Lower Coal Measures: Mercer County, Illinois.

1897. Orthis conf. resupinoides. Smith, Proc. Am. Phil. Soc., vol. 35, p. 28.

Lower Coal Measures: White and Conway counties, Arkansas.

#### Schizophoria swallovi Hall.

- 1848. Orthis resupinata. Christy, Letters on Gool., pl. 3, tigs. 1, 2.
  Carboniferous L. S.: Oquawka, Illinois.
- 1858. Orthis swallovi. Hall, Geol. Iowa, vol. 1, pt. 2, p. 597, pl. 12, figs. 5a, b. Burlington L. S.: Burlington, Iowa; Quincy, Illinois; Missouri.
- 1883. Orthis Swallovi. Hall, Rep. N. Y. State Geol. for 1882, pl. (6)36, figs. 23, 24. Burlington L. S.: Burlington, Iowa.
- 1892. Orthis Swallovi. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 6, figs. 23, 24. Burlington L. S.: Burlington, Iowa.
- 1894. Orthin swallovi. Keyes, Mo. Geol. Surv., vol. 5, p. 63, pl. 38, fig. 5. Burlington L. S.: Hannibal, Missouri.

# SCHŒNASTER Meek and Worthen, 1860.

#### Schenaster fimbriatus Meek and Worthen.

- 1860. Palasterina (Schoenaster) fimbriata. Meek and Worthen, Proc. Acad. Nat. Sci., Phil., p. 449.
  - St. Louis L. S.: St. Clair County, Illinois.
- 1866. Schwauster fimbriatus. Mock and Worthen, Gool. Surv. III., vol. 2, p. 278, pl. 19, figs. 7a-d.
  - St. Louis Group: St. Clair County, Illinois.

# Schonaster legrandensis Miller and Gurley.

1890. Schoenaster legrandensis. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 371, pl. 9, figs. 7, 8.

Kinderhook Group: Legrand, Iowa.

# Schenaster wachsmuthi Meek and Worthen.

1866. Schænaster Wachsmuthi. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 259.

Upper Burlington L. S.: Burlington, Iowa.

1868. Schanaster Wachsmuthi. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 499, pl. 17, fig. 4.

Burlington L. S.: Burlington, Iowa.

# (SCORPIO.)

Scorpio carbonarius Meek and Worthen. See Eoscorpius carbonarius.

# SCYTALOCRINUS Wachsmuth and Springer, 1879.

# Scytalocrinus abnormis Worthen.

1875. Scaphiocrinus abnormis. Worthen, Geol. Surv. Ill., vol. 6, p. 519, pl. 31, fig. 6. St. Louis Group: Monroe County, Illinois.

#### Scytalocrinus bisselli Worthen.

1873. Poteriocrinites Bisselli. Worthen, Geol. Surv. Ill., vol. 5, p. 546, pl. 21, fig. 4. Chester Group: Chester, Illinois.

### Scytalocrinus dactylus Hall.

1860. Graphiocrinus dactylus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Iowa, p. 80. St. Louis L. S.: Near St. Louis, Missouri.

1873. Graphiccinus dactylus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 559, pl. 20, fig. 9.
 St. Louis L. S.: Monroe County, Illinois.

1894. Soytalocrinus dactylus. Keyes, Mo. Geol. Surv., vol. 4, p. 213. St. Louis L. S.: St. Louis, Missouri.

#### Scytalocrinus decabrachiatus Hall.

1858. Scaphiocrinus decabrachiatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 679, pl. 25, fig. 1. Kuskaskia L. S.: Kaskaskia, Illinois.

1860. Scaphiocrinus longidactylus. McChesney, Desc. New Pal. Foss., p. 7. Kaskaskia L. S.: Kaskaskia, Illinois.

1865. Scaphiocrinus longidactylus. McChesney, Ill. New Spec. Foss., pl. 4, fig. 4.

1868. Scaphiocrinus longidactylus. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 4, pl. 4, fig. 4.

Chester L. S.: Kaskaskia, Illinois.

1882. Scaphiocrinus decabrachiatus. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 17.

St. Louis L. S. (not Chester, as reported by Hall).

# Scytalocrinus decadactylus Meek and Worthen.

1860. Pateriocrinus (Scaphiocrinus) decadactylus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 394.

Keokuk L. S.: Appanoose, Hancock County, Illinois.

1866. Scaphiocrinus decadactylus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 238, pl. 17, fig. 6.

Keokuk L. S.: Appanoose, Hancock County, Illinois.

# Scytalocrinus grandis Wachsmuth and Springer.

1860. Cyathocrinus dekadaotylus. Lyon and Casseday, Am. Jour. Sci. (2), vol. 29, p. 73.

Subcarboniferous: Montgomery County, Indiana.

1875. Polericerinus Coreyi. Worthen, Geol. Snrv. Ill., vol. 6, p. 516, pl. 29, figs. 2, 3 (not P. coreyi M. and W., 1869).

Keokuk Group: Crawfordsville, Indiana.

1879. Poteriocrinus (Scytalocrinus) grandis. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil., p. 341. (Rev. Palaeocr. I, p. 118.)

### Scytalocrinus indianensis Meek and Worthen.

1865. Poteriocrinus Indianensis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil.,
p. 155.

Kcokuk Group: Crawfordsville, Indiana.

1868. Poteriocrinus Indianensis. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 515, pl. 20, fig. 4.

Keokuk Group: Crawfordsville, Indiana.

### Scytalocrinus macrodactylus Meek and Worthen.

1861. Poteriocrinus fusiformis. Hall, Desc. New Spec. Crin., p.6. (Not P. fusiformis Schultz.)

Burlington L. S.

1861. Poteriocrinus fusiformis. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 302. Burlington L. S: Burlington, Iowa.

1869. Scaphiocrinus macrodactylus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 140.

Lower Burlington L. S.: Burlington, Iowa.

1873. Scaphiocrinus macrodactylus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 415, pl. 2, fig. 9.
Burlington L. S.: Burlington, Iowa.

### Scytalocrinus robustus Hall.

1861. Scaphiocrinus robustus. Hall, Desc. New Spec. Crin., p. 7. Keokuk L. S.

1861. Scaphiocrinus robustus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 315. Keokuk L. S.: Crawfordsville, Indiana.

1872. Scaphiocrinus robustus. Hall, Photo. Plates of Crinoids, pl. 6, figs. 3-5.

1875. Poleriocrinus Hoveyi. Worthen, Geol. Surv. Ill., vol. 6, p. 516, pl. 29, fig. 6. Keokuk Group: Crawfordsville, Indiana.

1882. Poteriocrinus hamiltonensis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 7.

Upper Keokuk L.S.: Hamilton, Illinois.

1883. Poteriocrinus hamiltonensis. Worthen, Geol. Surv. Ill., vol. 7, p. 273, pl. 27, fig. 9.

Keokuk Group: Hamilton, Illinois.

#### Scytalocrinus talboti Worthen.

1882. Poteriocrinus talboti. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 17. St. Louis L. S.: Monroe County, Illinois.

1883. Poteriocrinus Talboti. Worthen, Geol. Surv. Ill., vol. 7, p. 287, pl. 30, fig. 7. St. Louis L. S.: Monroe County, Illinois.

# Scytalocrinus vanhornei Worthen.

1875. Poteriocrinus Van Hornei. Worthen, Geol. Surv. Ill., vol. 6, p. 517, pl. 31, figs. 2, 3.

St. Louis L. S.: Alton, Illinois.

1894. Scytalocrinus vanhornei. Keyes, Mo. (feol. Surv., vol. 4, p. 213, pl. 26, fig. 3. St. Louis L. S.: St. Louis, Missouri.

# Scytalocrinus wachsmuthi Wetherby.

188). Scytalocrinus wachsmuthi. Wetherby, Jour. Cinn. Soc. Nat. Hist., vol. 3, p. 155, pl. 5, fig. 4.

Kaskaskia Group: Pulaski County, Kentucky.

# Scytalocrinus wetherbyi Miller.

1879. Poteriocrinus Wetherbyi. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 2, p. 36, pl. 8, figs. 1-1b.

Kaskaskia Group: Pulaski County, Kentucky.

# SEDGWICKIA McCoy, 1844.

# Sedgwickia altirostrata Meek and Hayden.

1858. Allorisma? altirostrata. Meck and Hayden, Proc. Acad. Nat. Sci. Phil., p. 263.

Upper Coal Measures: Grasshopper Creek, Kansas.

1864. Sedgwickia? altirostrata. Meek and Hayden, Pal. Up. Mo., p. 41, pl. 1, fig. 9. Coal Measures: Juniata, on Big Blue River, Kansas.

# Sedgwickia concava Meek and Hayden.

1858. Lyonsia (Penopaea) concara. Meek and Hayden, Trans. Albany Inst., vol. 4, p. 82.

Permian: Missouri River.

1864. Sedywickia? concara. Meek and Hayden, Pal. Up. Mo., p. 41, pl. 1, figs. 8a, b. Coal Measures: Nebraska, opposite the northern boundary of Missouri.

1877. Sedgrickia? concara. Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 276, pl. 6, fig. 3.

Upper Coal Measures: Foothills southeast of Salt Lake City, Wahsatch range, Utah.

# Sedgwickia subarcuata Meek and Worthen.

1835. Sedgwickia (Sanguinolites!) subarcuatu. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 251.

Upper Keokuk Group.

1868. Sedgwickia (Sanguinolites t) subarcuata. Meek and Worthen, Geol. Surv., Ill., vol. 3, p. 537, pl. 19, fig. 3b. Keokuk Group.

# Sedgwickia topekensis Shumard.

1×58. Leptodomus Topekaensis. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 208. Coal Measures: Missouri River bluffs, a short distance below mouth of Kansas River.

1864. Sedwickiu topekaensis? Meek and Hayden, Pal. Up. Mo., p. 40, tigs. A. B. Coal Measures: Leavenworth City, Kansus.

1891. Sedgwickia topekaensis. White, Bull. U. S. Geol. Surv., No. 77, p. 26, pl. 4, fig. 11.

Permiau: Goodwin Creek, Baylor County, Texas.

1894. Allorisma topekaensis. Keyes, Mo. Geol. Surv., vol. 5, p. 128 Upper Coal Measures: Kausas City, Missouri.

# SEMINULA McCoy, 1844.

# Seminula argentea Shepard.

1838. Terebratula argentea. Shepard, Am. Jour. Sci. (1), vol. 34, p. 152, fig. 8. Limestone: Western bluff of Little Vermilion River, Illinois.

1852. Torebratula plano-sulcata. Owen, Geol. Rep. Wis., Iowa, and Minn., tab. 5, fig. 9.

Carboniferous L. S.: Near Council Bluffs.

# Seminula argentea Shepard—Continued.

- 1852. Terebratula subtilita. Hall, Stansb. Exped. Gt. Salt Lake, p. 409, pl. 2, figs. 1a, b, 2a, b.
  - Carboniferous: Missouri River, near Weston.
- 1854. Terebratula subtilita. Shumard, Marcy's Expl. Red River of Louis., p. 176, pl. 4, fig. 8. Carboniferous: Washington County, Arkansas.
- 1855. Terebratula subtilita. Schiel, Pac. R. R. Rep., vol. 2, p. 108, pl. 1, figs. 2a, b. Carboniferous L. S.: 6 miles west of Westport.
- 1856. Terebratula subtilita. Hall, Pac. R. R. Rep., vol. 3, p. 101, pl. 2, figs. 3-5. Carboniferous: Pecos Village, New Mexico.
- 1858. Terebratula subtilita. Marcou, Geol. N. A., p. 52, pl. 6, figs. 9-9f. Mountain L. S.: Sierra Madre; Sierra de Magoyon; Great Salt Lake; Tigeras and Pecos Village, New Mexico; summit of Sierra de Sandia and Sierra de Mogoyon; El Paso Chihuahua; junction of rivers San Pedro and Gilia, Arizona; sources of Rio Colorado Chiquito; Shasta County, California; Vancouver Island.
- 1858. Terebratula subtilita. Hall, Geol. Iowa, vol. 1, pt. 2, p. 714. Coal Measures: Ohio; Indiana; Illinois; Iowa; Missouri; Kansas; Nebraska; and Pecos Village, New Mexico.
- 1859. Spirigera subtilita. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 28. Upper Coal Measures: Kansas.
- 1860. Athyris differentius. McChesney, Desc. New Pal. Foss., p. 47. Coal Measures: Lasalle, Springfield, Belleville, and Sparta, Illinois; Charbonier and near Richmond, Missouri.
- 1860. Spirigera Charitonensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 651. Coal Measures: Chariton and Randolph counties, Missouri.
- 1860. Spirigera Hawnii. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 652. Coal Measures: Missouri.
- 1861. Athyris subtilita. Newberry, Ives's Colo. Expl. Exped., p. 126. Upper Carboniferous: Cherty L. S. on banks of Colorado between Little Colorado and Diamond rivers; Pecos Village, east of Santa Fé.
- 1863. Spirigera Singletonii. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 87. Lower Coal Measures: Boone and Adrain counties, Missouri.
- 1863. Spirigera caput-serpentis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 90. Upper Coal Measures: Missouri and Kansas.
- 1866. Athyris subtilita. Geinitz, Carb. und Dyas in Nebr., p. 40, tab. 3, figs. 7-9. Omaha City, Plattsmouth, Bennett's Mill, and Nebraska City, Nebraska.
- 1872. Athyris subtilita. Meek, U. S. Geol. Surv. Nebr., p. 180, pl. 1, fig. 12; pl. 5, fig. 8; pl. 8, fig. 4.
  - Upper Coal Measures: Nebraska City, Bennett's Mill, Wyoming, Cedar Bluff, Rock Bluff, Plattsmouth, Bellevue, and Omaha, Nebraska.
  - Coal Measures: Illinois; Missouri; Iowa; West Virginia; Ohio; Kansas; Pecos Village, New Mexico.
- 1873. Athyris subtilita. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 570, pl. 25, fig. 14. Coal Measures: Illinois.
- 1874. Athyris subtilita. Derby, Bull. Cornell Univ. (science), vol. 1, No. 2, p. 7, pl. 1, figs. 5, 7, 8; pl. 3, figs. 8, 16, 19; pl. 6, fig. 2; pl. 9, fig. 4. Coal Measures: Bomjardim, Itaitúba, and Paredão, Brazil.
- 1876. Spirigera subtilita. White, Powell's Rep. Geol. Uinta Mts., p. 90. Lower Aubrey Group: Confluence of Grand and Green rivers, and near Echo Park, Utah.
  - Upper Aubrey Group: Beehive Point, near Horseshoe Canyon, Utah.
  - Bull, 153——36

# Seminula argentea Shepard—Continued.

- 1876. Athyris subtilita. Meek, Sampson's Expl. Gt. Basin, Utah, p. 350, pl. 2, figs. 4a, b.
  - Yellow L. S. (Coal Measures): Humboldt Mountains.
- 1876. Athyris subtilita. Newberryi, U. S. Expl. Exp. from Santa F6 to Grand and Green rivers, p. 138.
  - Upper Carboniferous: On the Colorado; west of the San Francisco Mountains; junction of Grand and Green rivers; in the Sierra la Plata; at Santa Fé; Pecos.
- 1876. Athyris subtilita. Meek, Bull. U. S. G. and G. Surv. Terr., vol. 2, p. 355, pl. 1, figs. 2, 2a.
  - Carboniferous: Kattahwoke, Rocky Mountains.
- 1877. Spirigera subtilita. White, U. S. Geog. Surv., W. 100 Merid., vol. 4, p. 141, pl. 10. figs. 6a-c.
  - Carboniferous: Carizo Creek, Maricopa County; Camp Apache; Tenney's Ranch; Kaibab Plateau; confluence of White Mountain and Black rivers; Grass Mountain, 35 miles north of Pioche, and foothills of Dragoon Mountains, Arizona; Fossil Hill, White Pine County, and Camp Cottonwood, Nevada; 15 miles south of St. George; near Ophir City; Rock Canyon, Wasatch range, near Provo; and near Minersville, Utah.
- 1877. Athyris subtilita. Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 83, pl. 8, figs. 6, 6a. Carboniferous L. S.: Ruby Group; Moleen Peak; near Humboldt River, Nevada.
- 1884. Athyris subtilita. White, 13th Rep. Geol. Surv. Ind., p. 136, pl. 35, figs. 6-9. Coal Measures: Indiana.
- 1887. Athyris subtilita. Herrick, Bull. Den. Univ., vol. 2, p. 44, pl. 1, figs. 18 (16a-c?).
  Coal Measures: Flint Ridge, Ohio.
- 1888. Athyris subtilita. Keyes, Proc. Acad. Nat. Sci. Phil., p. 231.
  - Lower Coal Measures: Des Moines, Iowa.
- 1891. Athyris subtilita. Whitfield, Am. N. Y. Acad. Sci., vol. 5, p. 604, pl. 16, figs. 7-9.
  Coal Measures: Hocking County, Ohio.
- 1894. Seminula subtilita. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 35, figs. 16-19.
  Coal Measures: Chariton County, Missouri; Winterset, Iowa, near Kansas City, Missouri.
- 1894. Athyris argentea. Keyes, Mo. Geol. Surv., vol. 5, p. 92, pl. 39, figs. 11a-d. Coal Measures: Kansas City, Lexington, and Clinton, Missouri.
- 1895. Seminula subtilita. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 47, figs. 17-31.
  Coal Measures: Manhattan, Kansas; Copper's Creek, Iowa; Chariton County, Missouri; Winterset, Iowa; Miami County, Kansas; Kansas City, Missouri; Ohio.
  - (1) Chester L. S.: Caldwell County, Kentucky; Chester, Illinois.
- 1895. Athyris subtilita. Whitfield, Geol. Surv. Ohio, vol. 7, p. 488, pl. 12, figs. 7-9. Coal Measures: Falls Township and Webb Summit, Hocking County, Ohio.
- 1897. Athyris subtilita. Smith, Proc. Am. Phil. Soc., vol. 35, p. 31.
  Upper Coal Measures: Sebastian County, Arkansas; Poteau Mountain,
  Indian Territory; Boone Chert, Stone County, Arkansas.

# Seminula claytoni Hall and Whitfield.

- 1877. Athyris claytoni. Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 256, pl. 4, figs. 15-17.
  - Lower Carboniferous L. S. (Waverly ?): Little Cottonwood, 800 feet east of Reed and Benson's mine, Wahsatch range, Utah.

# Seminula dawsoni Hall and Clarke.

1863. Athyris subtilita. Davidson, Quart. Jour. Geol. Soc. Lond., vol. 19, p. 170, pl. 9, figs. 4, 5. (Not A. subtilita Hall, 1852.)

Lower Carboniferous L. S.: Shubenacadie, Brookfield, etc., Nova Scotia.

1868. Athyris subtilita. Dawson, Acad. Geol., p. 290, figs. 88a-c.

Lower Carboniferous L. S.: Shubenacadie, Brookfield, etc., Nova Scotia.

1894. Seminula Dawsoni. Hall, 13th Am. Rep. N. Y. State Geol., p. 652. Carboniferous L. S.: Windsor, Nova Scotia.

1895. Seminula Dawsoni. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, p. 364, pl. 47, figs. 32-34.

Carboniferous L. S.: Windsor, Nova Scotia.

1897. Seminula Dawsoni. Hall, 14th Rep. N. Y. State Geol., p. 359, pl. 9, figs. 14-16. Carboniferous L. S.: Windsor, Nova Scotia.

# Seminula formosa Swallow.

1863. Spirigera formosa. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 91. Archimedes L. S.: Boonville, Missouri.

1863. Spirigera euzona. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 91. Archimedes L. S.: Cooper County, Missouri.

1894. Athyris formosa. Keyes, Mo. Geol. Surv., vol. 5, p. 91. Keokuk L. S.: Boonville, Missouri.

# Seminula maconensis Swallow.

1860. Spirigera Maconensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 651. Coal Measures: Montgomery County, Missouri.

# Seminula parva Swallow.

1863. Terebratula parva. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 83. Keokuk, Iowa: Monroe and Cooper counties, Missouri.

1894. Terebratula parva. Keyes, Mo. Geol. Surv., vol. 5, p. 105. Keokuk L. S.: Keokuk, Iowa.

# Seminula persinuata Meek.

1877. Athyris? persinuata. Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 81, pl. 9, figs. 4-4b.

Carboniferous L. S.: White Pine Mountains, Nevada.

# Seminula plattensis Swallow.

1863. Spirigera plattensis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 87. Upper Coal Measures: Missouri, Kansas, and Nebraska.

# Seminula subquadrata Hall.

1858. Athyris subquadrata. Hall, Geol. Iowa, vol. 1, pt. 2, p. 703, pl. 27, figs. 2 a-d; p. 708, fig. 118.

Kaskaskia L. S.: Chester, Illinois; Crittenden County, Kentucky.

1877. Athyris subquadrata? Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 271, pl. 5, figs. 19, 20.

Wahsatch L. S.: Snowstorm Hill, near Dry Canyon, Oquirrh Mountains, Utah.

1886. Athyris subquadrata. Heilprin, 2d. Geol. Surv. Penn., Ann. Rep. for 1885, p. 453, p. 440, fig. 2.

Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.

1886. Athyris subquadrata. Heilprin, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 269, fig. 2.

Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.

1891. Athyris subquadrata. Whitfield, Am. N. Y. Acad. Sci., vol. 5, p. 585, pl. 14, figs. 1-3.

Maxville L. S.: Newtonville and Maxville, Obio.

#### Seminula subquadrata Hall—Continued.

- 1894. Seminula subquadrata. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 35, figs. 13, 15.
  - Chester L. S.: Crittenden County, Kentucky,

St. Louis L. S: Pella, Iowa.

- 1894. Athyris subquadrata. Keyes, Mo. Geol. Surv., vol. 5, p. 92.
  - Kaskaskia L. S.: Ste. Mary, Missouri.
- 1895. Seminula subquadrata. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 47. figs. 7-9, 15, 16; pl. 84, figs. 30, 31.

Kaskaskia L. S.: Chester, Ill.; Crittenden County, Kentucky.

St. Louis L. S.: Pella, Iowa; Spergen Hill, Indiana.

1895. Athyris subquadrata. Whitfield, Geol. Surv. Ohio, vol. 7, p. 472. pl. 10. figs. 1-3.

Maxville L. S.: Newtonville and Maxville, Ohio.

1897. Athyris subquadrata. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 258, pl. 18,

Batesville S. S.: Batesville, Arkansas.

#### Seminula trinuclea Hall.

- 1856. Terebratula trinuclea. Hall, Trans. Albany Inst., vol. 4, p. 7. St. Louis L. S.: Spergen Hill and Bloomington, Indiana.
- 1858. Terebratula trinuclea. Hall, Geol. Iowa, vol. 1, pt. 2, p. 659, pl. 23, figs. 4 a-c, 5.

Warsaw L. S.: Bloomington and Spergen Hill, Indiana.

- 1882. Athyris trinucleus. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 50, pl. 6, figs. 22-27.
  - St. Louis Group: Spergen Hill and Bloomington, Indiana; Alton, Illinois; near Boonville, Missouri.
- 1883. Athyris trinucleus. Hall, 12th Rep. Geol. Surv. Ind., p. 329, pl. 29, figs. 22-27. St. Louis Group: Spergen Hill, Lanesville, Greencastle Junction, and Bloomington, Indiana.
- 1894. Seminula trinuclea. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 35, figs. 11, 12, 14.
  - St. Louis Group: Harrison County and Spergen Hill, Indiana.
- 1894. Athyris trinuclea. Keyes, Mo. Geol. Surv., vol. 5, p. 92. St. Louis L. S.: Barrett Station, Missouri.
- 1895. Seminula trinuclea. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2. pl. 47, figs. 5, 6, 10-14.
- St. Louis L. S.: Harrison County, Spergen Hill, and Bloomington, Indiana. Seminula wasatchensis White.
  - 1874. Rhynchonella Wasatchensis. White, Prelim. Rep. Inv. Foss., p. 19.
    - Carboniferous (Coal Measures): Rock Canyon, Wasatch range, near Provo.
  - 1877. Rhynchonella Wasatchensis. White, U.S. Geog. Surv. W. 100 Merid., vol. 4, p. 130, pl. 9, figs. 3a-d.

Carboniferous: Rock Canyon, Wasatch range, near Provo, Utah.

# Seminula (species undetermined).

1895. Athyris (Seminula?) sp.? Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 47, fig. 35.

Coal Measures? Ohio.

# SEPTOPORA Prout, 1859.

# Septopora biserialis Swallow.

1858. Synocladia rirgulacea (†) Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 179. (Not S. rirgulacea Phillips.)

Lower Permian: Valley of the Cottonwood, Kansas.

# Septopora biserialis Swallow-Continued.

- 1858. Synocladia biserialis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 179. Lower Permian: Valley of the Cottonwood, Kansas.
- 1859. Synocladia biserialis. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 24. Upper Coal Measures: Fort Riley, Kansas.
- 1866. Synocladia virgulacea. Geinitz, Carb. und Dyas in Nebr., p. 70, tab. 5, fig. 14. (Not S. virgulacea Phillips, 1829.) Nebraska.
- 1872. Synocladia biserialis. Meek, U. S. Geol. Surv. Nebr., p. 156, pl. 7, figs. 5a-e. Permian: Kansas.
  - Upper Coal Measures: Nebraska City, Nebraska; Kansas; Nebraska; Iowa; Illinois.
  - Lower Coal Measures: Illinois.
- 1873. Synocladia virgulacea, var. biserialis. Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 24, figs. 15a-c.
- 1874. Synocladia biserialis. Meek, Am. Jour. Sci. (3), vol. 7, p. 486. Upper Coal Measures.
- 1875. Synocladia biserialis. Meek, Pal. Ohio, vol. 2, p. 326, pl. 20, figs. 5a, b. Lower Coal Measures: Near Newark, Ohio.
- 1877. Synocladia biserialis. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 107, pl. 7, figs. 3a-e.
  - Carboniferous (Red Wall L. S.): Camp Apache, Maricopa County, Arizona.
- 1884. Synocladia biserialis. White, 13th Rep. Geol. Surv. Ind., p. 138, pl. 25, figs. 11-13.
  - Coal Measures: Above roof of Coal K, Indiana.
- 1887. Septopora biserialis. Foerste, Bull. Den. Univ., vol. 2, p. 87, pl. 7, figs. 16a, b. Coal Measures: One-half mile west of Brownsville, Ohio.
- 1888. Synocladia biserialis. Keyes, Proc. Acad. Nat. Sci., Phil., p. 225. Lower Coal Measures: Des Moines, Iowa.
- 1890 Septopora biserialis. Ulrich Geol. Surv. Ill., vol. 8, p. 631, pl. 56, fig. 11.

  Upper and Lower Coal Measures: Illinois; Iowa; Kansas; Nebraska;
  Missouri; Kentucky.
- 1894. Septopora biserialis. Keyes, Mo. Geol. Surv., vol. 5, p. 32, pl. 34, figs. 1a-d. Lower Coal Measures: Des Moines, Iowa. Upper Coal Measures: Kansas City, Missouri.
  - 1897. Septopora biserialis. Smith, Proc. Am. Phil. Soc., vol. 35, p. 27.
    Upper Coal Measures: Poteau Mountain, Indian Territory.

# Septopora biserialis var. gracilis Foerste.

- 1887. Septopora biserialis var. gracilis. Foerste, Bull. Den. Univ., vol. 2, p. 80, pl. 7, figs. 7a-c.
  - Coal Measures: Flint Ridge, Ohio.

# Septopora biserialis var. nervata Ulrich.

- 1890. Septopora biserialis var. nervata. Ulrich, Geol. Surv. Ill., vol. 8, p. 632, pl. 64, fig. 6.
  - Chester Group: Kentucky.
  - Upper Coal Measures: Illinois; near Red Oak, Iowa.

#### Septopora cestriensis Prout.

- 1859. Septopora Cestriensis. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 448, pl. 18, figs. 2-2c.
  - Upper Archimedes L. S.: Chester, Illinois.
- 1873. Synocladia cestriensis. Meek and Worthen. (See Septopora subquadrans.)
- 1890. Septopora cestriensis. Ulrich, Geol. Surv. Ill., vol. 8, p. 628, pl. 64, figs. 1-1b. Chester Group: Chester, Illinois; Sloan's Valley, Kentucky.
- 1894 Septopora cestriensis. Keyes, Mo. Geol. Surv., vol. 5, y. 32. Kaskaskia L. S.: Chester, Illinois.

### Septopora decipiens Ulrich.

1890. Septopora decipiens. Ulrich, Geol. Surv. Ill., vol. 8, p. 630, pl. 67, fig. 9. Chester Group: Sloan's Valley, Kentucky.

### Septopora delicatula Ulrich.

1890. Septopora delicatula. Ulrich, Geol. Surv. Ill., vol. 8, p. 634, pl. 64, figs. 5, 5a. Lower Coal Measures: Seville, Illinois.

# Septopora pinnata Ulrich.

1890. Septopora pinnata. Ulrich, Geol. Surv. Ill., vol. 8, p. 633, pl. 64, fig. 7; pl. 65, figs. 1, 1a.

### Septopora rectistvla Whitfield.

1882. Synocladia rectistyla. Whitfield, Am. N. Y. Acad. Sci., vol. 2, p. 220. Maxville L. S.: Newtonville, Ohio.

1891. Synocladia rectistyla. Whitfield, Am. N. Y. Acad. Sci., vol. 5, p. 579, pl. 13, figs. 9, 10.

Maxville L. S.: Newtonville, Ohio.

1895. Synocladia rectistyla. Whitfield, Geol. Surv. Ohio, vol. 7, p. 467, pl. 9, figs. 9, 10.

Maxville L. S.: Newtonville, Ohio.

# Septopora robusta Ulrich.

1890. Septopora robusta. Ulrich, Geol. Surv. Ill., vol. 8, p. 633, pl. 56, figs. 9-9c; pl. 64, figs. 3, 3a.
Upper Coal Measures: Fayette County, Illinois.

# Septopora robusta var. intermedia Ulrich.

1890. Septopora robusta var. intermedia. Ulrich, Geol. Surv. Ill., vol. 8, p: 634, pl. 56, fig. 10; pl. 64, figs. 4, 4a.
Chester Group: Litchfield and Sloan's Valley, Kentucky.

# Septopora subquadrans Ulrich.

1873. Synocladia Cestriensis. Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 24, figs. 14a-c. (Not S. cesteriensis Prout, 1859.)
Chester L. S.

1874. Synocladia Cestriensis. Meek, Am. Jour. Sci. (3), vol. 7, p. 486. Chester L. S.

1890. Septopora subquadrans. Ulrich, Geol. Surv. Ill., vol. 8, p. 629, pl. 56, figs. 7, 8; pl. 64, figs. 2-2b.

# SERPULA Linnaeus, 1758.

# Serpula insita White.

1878. Serpula incita. White, Proc. Acad. Nat. Sci. Phil., p. 37. Coal Measures: Newport, Vermilion County, Indiana.

1888. Serpula insita. White, Cont. to Inv. Pal., No. 8, p. 171, pl. 42, fig. 8a. Coal Measures: Newport, Vermilion County, Indiana.

Serpula planorbites Geinitz (not Mün.). See Straparollus catilloides.

#### Serpula (undetermined species).

1858. Serpula (Spirorbis) valvata Goldfuss. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 180.
Upper Permian: Kansas.

opport cinian. Ransas.

# SERPULITES Murchison, 1839.

# Serpulites annulatus Dawson.

1868. Serpulites annulatus. Dawson, Acad. Geol., p. 312, fig. 131. Carboniferous L. S.: Windsor, Nova Scotia.

### Serpulites carbonarius McCov.

\*1844. Serpulites carbonarius. McCoy, Carb Foss. Ireland, p. 170, Tab. 23, fig. 32. 1878. Serpulites carbonarius. Etheridge, Quart. Jour. Geol. Soc. Lond., vol. 34, p. 611.

Carboniferous: Rawling Bay.

### Serpulites hortonensis Dawson.

1868. Serpulites Hortonensis. Dawson, Acad. Geol., p. 312, fig. 130. Carboniferous L. S.: Halfway River, Nova Scotia.

# Serpulites inelegans Dawson.

1868. Serpulites inelegans. Dawson, Acad. Geol., p. 312. Carboniferous L. S.: Windsor, Nova Scotia.

# Serpulites murrayi Dawson.

1883. Serpulites Murravi. Dawson, Rep. Peter Redpath Mus., No. 2, p. 13. Lower Carboniferous L. S.: Port-au-Port, Newfoundland.

# (SHUMARDOCRINUS Miller and Gurley, 1895.)

Shumardocrinus concinnus. See Steganocrinus concinnus.

SOLEN Linnaeus, 1758.

Solen missouriensis. See Promacrus missouriensis.

Solen permianus. See Solenopsis permianus.

# Solen quadrangularis Winchell

1862. Solen quadrangularis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 422. Marshall Group: Marshall, Michigan.

1870. Solen quadrangularis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 256. Waverly Group: Granville, Ohio.

Solen scalpriformis. See Solenopsis scalpriformis.

# Solen (species undetermined).

1887. Solon 7 sp. 7 Herrick, Bull. Den. Univ., vol. 2, p. 38, pl. 1, fig. 19. Coal Measures: Flint Ridge, Ohio.

SOLENISCUS Meek and Worthen, 1860.

#### Soleniscus altonensis Worthen.

1873. Macrocheilus Altonensis. Worthen, Geol. Surv. Ill., vol. 5, p. 593, pl. 28, fig. 8. Lower Coal Measures: Alton, Illinois.

1889. Soleniscus altonensis. Keyes, Am. Nat., vol. 23, p. 423.

1889. Soleniscus altonensis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 307.

# Soleniscus? anguliferus White.

1874. Macrocheilus angulifera. White, Prelim. Rep. Inv. Foss., p. 22. Carboniferous (Coal Measures): Camp Cottonwood, Spring Mountain range, Nevada.

1877. Macrocheilus anguliferus. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 160, pl. 12, figs. 3a-f.

Carboniferous: Camp Cottonwood, near Spring Mountain, Nevada.

1889. Soleniscus ?? anguliferus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 307.

Soleniscus attenuatus. See Soleniscus fusiformis.

#### Seleniscus? blairi Miller.

1891. Macrochilina blairi. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 84, pl. 14, fig. 5.

Chouteau L. S.: Sedalia, Missouri.

1892. Macrochilina blairi. Miller, 17th Rep. Geol. Surv. Ind., p. 694, pl. 14, fig. 5. Chouteau L. S.: Sedalia, Missouri.

#### Soleniscus brevis White.

- 1858. Macrocheilus ventricosus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 718, pl. 29, fig. 8, (Not Phasianella ventricosa Goldf., 1841.)
  - Lower Coal Measures: Des Moines Valley, Iowa.
- 1881. Soleniscus brevis. White, U. S. Geolg. Surv. W. 100 Merid., vol. 3, Supp., Appendix, p. xxviii, pl. 4, figs. 5a-c.
  - Carboniferous: Coyote Creek; north of Black Lake; and near Taos, New Mexico.
- 1884. Soleniscus (Macrocheilus) ventricosus. White, Proc. U. S. Nat. Mus., vol. 6, p. 187, pl. 8, figs. 11, 12.
  - Carboniferous: Illinois.
- 1884. Soleniscus (Macrocheilus) ventricosus. White, 13th Rep. Geol. Surv. Ind., p. 155, pl. 34, figs. 11, 12.
  - Coal Measures: Illinois, Iowa, and New Mexico.
- 1889. Soleniscus brevis.
  1889. Soleniscus brevis.
  1894. Soleniscus brevis.
  1895. Keyes, Am. Nat., vol. 23, p. 423, pl. 20, figs. 12-14.
  1896. Keyes, Proc. Acad. Nat. Sci. Phil., p. 307.
  1894. Soleniscus brevis.
  1895. Keyes, Mo. Geol. Surv., vol. 5, p. 212.
  - Upper Coal Measures: Kansas City and Clinton, Missouri.

#### Soleniscus carinatus Stevens.

- 1858. Loxonema carinata. Stevens, Am. Jour. Sci. (2), vol. 25, p. 259. Coal Measures: Danville, Illinois.
- 1889. Soloniscus carinatus. Keyes, Am. Nat., vol. 23, p. 423.
- 1889. Soloniscus carinatus. Keyes, Proc. Nat. Acad. Sci. Phil., p. 307.

# Soleniscus cooperensis. See Sphærodoma cooperensis.

#### Soleniscus fusiformis Hall.

- 1858. Macrocheilus fusiformis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 718, pl. 29, fig. 7. Coal Measures: Alpine Dam, Iowa.
- 1881. Polyphemopsis fusiformis. White, 2d Ann. Rep. Stat. and Geol. Ind., p. 519. pl. 8, fig. 6.
  - Coal Measures: Newport, Indiana.
- 1884. Soleniscus (Macrocheilus) fueiformis. White, Proc. U S. Nat. Mus., vol. 6, p. 187, pl. 8, figs. 4-6.
  - Carboniferous: Illinois.
- 1884. Soleniscus (Macrocheilus) fusiformis. White, 13th Rep. Geol. Surv. Ind., p. 154, pl. 34, figs. 4-6. Coal Measures: Illinois and Iowa.
- 1884. Polyphemopsis? ? White, 13th Rep. Geol. Surv. Ind., p. 164, pl. 32, fig. 6. Coal Measures: Newport, Indiana.
- 1887. Macrocheilus (Soleniscus) fusiformis? Herrick, Bull. Den. Univ., vol. 2, p. 147, pl. 14, fig. 7.
- Coal Measures: Flint Ridge, Ohio. 1888. Macrocheilus fusiformis. Herrick, Bull. Den. Univ., vol. 4, pl. 11, fig. 7.
- Coal Measures: Fultonham, Ohio. 1889. Soleniscus attenuatus. Keyes, Am. Nat., vol. 23, p. 423, pl. 20, figs. 7-9.
- 1889. Soleniscus ? attenuatus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 307.
- 1897. Macrocheilus conf. fusiformis. Smith, Proc. Am. Phil. Soc., vol. 35, p. 41. Lower Coal Measures: Conway County, Arkansas.

# Soleniscus gracilis Cox.

- 1857. Macrocheilus gracilis. Cox, Geol. Rep. Ky., vol. 3, p. 570, pl. 8, figs. 11, 11a. Coal Measures: Bonharbour, Daviess County, Kentucky.
- 1888. Macrocheilus gracilis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 239. Lower Coal Measures: Des Moines, Iowa.
- 1889. Soleniscus gracilis. Keyes, Am. Nat., vol. 23, p. 423, pl. 20, fig. 6.
- 1889. Soleniscus gracilis. Keyes, Proc. Acad. Nat. Soi. Phil., p. 307.

# Soleniscus gracilis Cox—Continued.

1891. Soleniscus gracilis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 262.

Lower Coal Measures: Des Moines, Iowa.

1894. Soleniscus gracilis. Keyes, Mo. Geol. Surv., vol. 5, p. 211.

Lower Coal Measures: Clinton, Missouri.

### Soleniscus hallanus Geinitz.

1866. Macrocheilus Hallanum. Geinitz, Carb. und Dyas in Nebr., p. 5, tab. 1, fig. 7.

Wyoming, Nebraska.

1889. Soleniscus hallanus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 308.

#### Soleniscus hildrethi Conrad.

1842. Plectostylus hildrethi. Conrad, Jour. Acad. Nat. Sci. Phil. (1), vol. 8, p. 275, pl. 17, fig. 2.

Carboniferous, Flint Ridge, Ohio.

#### Soleniscus humilis Keyes.

1888. Macrocheilus humilis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 239, pl. 12, fig. 1.

Lower Coal Measures: Des Moines, Iowa.

1889. Soleniscus humilis. Keyes, Am. Nat., vol. 23, p. 423, pl. 20, fig. 4.

1889. Soleniscus humilis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 308.

1891. Soloniscus humilis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 262. Lower Coal Measures: Des Moines, Iowa.

1892. Soleniscus humilis. Keyes, Proc. Iowa Acad. Sci., vol. 1, pt. 2, p. 23.
Lower Coal Measures: Near Des Moines, Iowa.

#### Soleniscus kansasensis Swallow.

1858. Macrocheilus Kansasensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 201.

Upper Coal Measures: Missouri and Kansas, Willow Springs, Kansas.

1889. Soleniscus kansasensis. Keyes, Am. Nat., vol. 23, p. 423.

1889. Soleniscus kansasensis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 308.

### Soleniscus klipparti Meek.

1872. Macrocheilus klipparti. Meek, Proc. Acad. Nat. Sci. Phil. for 1871, p. 328. Lower Coal Measures: Near Somerset, Perry County, Ohio.

1875. Macrocheilus Kupparti. Meek, Pal. Ohio, vol. 2, p. 346, pl. 20, figs. 6a-c. Lower Coal Measures: Near Somerset, Perry County, Ohio.

1889. Soleniscus klipparti. Keyes, Am. Nat., vol. 23, p. 423, pl. 20, fig. 11.

1889. Soleniscus klipparti. Keyes, Proc. Acad. Nat. Sci. Phil., p. 308.

Soleniscus medialis. See Sphærodoma medialis.

# Soleniscus missouriensis Swallow.

1858. Macrocheilus Missouriensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 201.

Lower Coal Measures: Howard County, Missouri.

1894. Soleniscus missouriensis. Keyes, Mo. Geol. Surv., vol. 5, p. 211. Upper Coal Measures: Kansas City, Missouri.

#### Soleniscus newberryi Stevens.

1858. Loxonema Newberryii. Stevens, Am. Jour. Sci. (2), vol. 25, p. 259. Coal Measures: Danville, Illinois.

1858. Macrocheilus newberryi. Hall, Geol. Iowa, vol. 1, pt. 2, p. 719, pl. 29, fig. 9. Coal Measures: Illinois.

1873. Macrocheilus Newberryi. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 594, pl. 28, fig. 14.

Coal Measures: Danville, Illinois.

# Seleniscus newberryi Stevens-Continued.

- 1884. Soleniscus (Macrocheilus) newberryi. White, Proc. U. S. Nat. Mus., vol. 6, p. 187, pl. 8, figs. 7, 8.
  - Carboniferous: Illinois.
- 1884. Soloniscus (Macrochoilus) Nowberryi. White, 13th Rep. Geol. Surv. Ind., p. 153, pl. 34, figs. 7, 8.
  - Coal Measures: Danville, Illinois.
- 1888. Macrocheilus newberryi. Keyes, Proc. Acad. Nat. Sci. Phil., p. 240. Lower Coal Measures: Des Moines, Iowa.
- 1889. Soloniscus newberryi. Keyes, Am. Nat., vol. 23, p. 423, pl. 20, fig. 5.
- 1889. Soloniscus newberryi. Keyes, Proc. Acad. Nat. Sci. Phil., p. 308. 1891. Soloniscus newberryi. Keyes, Proc. Acad. Nat. Sci. Phil., p. 206.
  - Lower Coal Measures: Des Moines, Iowa.
- 1894. Soleniscus newberryi. Keyes, Mo. Geol. Surv., vol. 5, p. 212. Upper Coal Measures: Kansas City, Missouri.

# Soleniscus paludinæformis Hall.

- 1858. Macrocheilus paludinaformis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 719, pl. 29,
  - Lower Coal Measures: Des Moines Valley, Iowa.
- 1884. Soleniscus (Macrocheilus) paludinæformis. White, Proc. U. S. Nat. Mus., vol. 6, p. 187, pl. 8, fig. 17. Carboniferous: Indiana.
- 1884. Soleniscus (Macrocheilus) paludinæformis. White, 13th Rep. Geol. Surv. Ind., p. 154, pl. 34, fig. 17. Coal Measures: Vermilion County, Indiana.
- 1888. Macrocheilus paludinæformis. Herrick, Bull. Den. Univ., vol. 4, pl. 11, fig. 10. Coal Measures: Fultonham, Ohio.
- 1889. Soleniscus paludinæformis. Keyes, Am. Nat., vol. 23, p. 423, pl. 20, fig. 16.
- 1889. Soleniscus paludinæformis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 308.
- 1891. Soloniscus paludinaformis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 262. Lower Coal Measures: Des Moines, Iowa.
- 1894. Soleniscus paludinæformis. Keyes, Mo. Geol. Surv., vol. 5, p. 211. Upper Coal Measures: Kansas City, Missouri.

# Soleniscus planus White.

- 1881. Soleniscus planus. White, U. S. Geog. Surv. W. 100 Merid., p. xxix, pl 4, figs. 4a-c.
  - Carboniferous: Coyote Creek, and north of Black Lake, New Mexico.
- 1884. Soloniscus planus. White, Proc. U. S. Nat. Mus., vol. 6, p 187, pl. 8, figs. 9, 10. Carboniferous: Illinois.
- 1884. Soleniscus planus. White, 13th Rep. Geol. Surv. Ind., p. 153, pl. 34, figs. 9, 10. Coal Measures: Danville, Illinois.
- 1887. Soleniscus planus. Herrick, Bull. Den. Univ., vol. 2, pl. 14, figs. 5, 6. Coal Measures: Flint Ridge, Ohio.
- 1889. Soloniscus planus. Keyes, Am. Nat., vol. 23, p. 423, pl. 20, fig. 18.

Soleniscus ponderosus. See Sphærodoma ponderosa.

Soleniscus primigenius. See Sphærodoma primogenia.

#### Soleniscus regularis Cox.

- 1857. Loxonema regularis. Cox, Geol. Surv. Ky., vol. 3, p. 566, pl. 8, fig. 2. Coal Measures: Daviess County, Kentucky.
- 1891. Macrocheilus regularis. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 600, pl. 15,
  - Coal Measures: Carbon Hill, Hocking County, Ohio.
- 1895. Macrocheilus regularis. Whitfield, Geol. Surv. Ohio, vol. 7, p. 485, pl. 11,
  - Coal Measures: Carbon Hill, Hocking County, Ohio.

#### Soleniscus? terranovicus Dawson.

1883. Macrocheilus Terranovicus. Dawson, Rep. Peter Redpath Mus., No. 2, p. 14. Lower Carboniferous L. S.: St. Georges Bay, Newfoundland.

Soleniscus texanus. See Sphærodoma texana.

# Soleniscus typicus Meek and Worthen.

- 1860. Soleniscus typicus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 467. Upper Coal Measures: Springfield, Illinois.
- 1866. Soleniscus typicus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 384, pl. 31, figs. 15a, b. Upper Coal Measures: Springfield, Missouri.
- 1884. Soleniscus typicus. White, Proc. U. S. Nat. Mus., vol. 6, p. 187, pl. 8, figs. 18, 19. Carboniferous.
- 1884. Soleniscus typicus. White, 13th Rep. Geol. Surv. Ind., p. 152, pl. 34, figs. 18, 19. Upper Coal Measures: Springfield, Illinois.
- 1889. Soleniscus typicus. Keyes, Am. Nat., vol. 23, p. 423, pl. 20, fig. 8. 1889. Soleniscus typicus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 308.

Soleniscus ventricosus. See Soleniscus brevis.

# Seleniscus? worthenanus Miller.

- 1890. Macrocheilus altonensis. Worthen, Geol. Surv. Ill., vol. 8, p. 143, pl. 24, figs. 1, 1a. (Not S. altonensis Worthen, 1873.) St. Louis L. S.: Alton, Illinois.
- 1889. Macrochilina worthenanus. Miller, N. A. Geol. and Pal., p. 409.

# Soleniscus (species undetermined).

- 1858. Macrocheilus spiratus. McCoy, Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 196.
  - Lower Permian: Kansas.
- 1884. Macrocheilus sp. f Walcott, Pal. Eureka Dist., p. 260, pl. 24, fig. 8. Lower Carboniferous: Eureka District, Nevada.
- 1887. Macrocheilus sp. f Herrick, Bull. Den. Univ., vol. 2, p. 21, pl. 2, fig. 2. Coal Measures: Flint Ridge, Ohio.
- 1887. Macrocheilus sp. ? Herrick, Bull. Den. Univ., vol. 2, pl. 3, fig. 1. Coal Measures: Flint Ridge, Ohio.

# SOLENOCARIS Meek, 1872.

# Selenocaris sancti-ludovici Worthen.

- 1884. Solonocaris st. ludovici. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 3. St. Louis L. S.: South St. Louis, Missouri.
- 1890. Solenocaris sancti-ludovici. Worthen, Geol. Surv. Ill., vol. 8, p. 153, pl. 28, fig. 3.
  - St. Louis L. S.: South St. Louis, Missouri.
- 1894. Soloniscus sancti-ludovici. Keyes, Mo. Geol. Surv., vol. 4, p. 239. St. Louis L. S.: St. Louis, Missouri.

# Solenocaris strigata Meek.

- 1872. Ceratiocaris (Solenocaris) strigata. Meek, Proc. Acad. Nat. Sci. Phil. for 1871, p. 335.
  - Base of Waverly Group: Danville, Kentucky.
- 1875. Ceratiocaris (Solenocaris) strigata. Meek, Pal. Ohio, vol. 2, p. 321, pl. 18, figs 4a-c.
  - Waverly Group: Danville, Kentucky.

# SOLENOCERAS Hyatt, 1883.

#### Solenoceras canaliculatum Cox.

1857. Nautilus canaliculatus. Cox, Geol. Rep. Ky., vol. 3, p. 575, pl. 10, figs. 3, 3a. Coal Measures: Nolin Iron Works, Edmonson County, Kentucky.

1883. Solenoceras canaliculatum. Hyatt, Proc. Bost. Soc. Nat. Hist., vol. 22, p. 286.

# SOLENOCHEILUS Meek and Worthen, 1870.

#### Solenocheilus blairi Miller.

1892. Solenocheilus blairi. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 75, pl. 12, fig. 2.

Chouteau L.S.: Pin Hook Bridge, 6 miles from Sedalia, Missouri.

1894. Solonochoilus blairi. Miller, 18th Rep. Geol. Surv. Ind., p. 329, pl. 12, fig. 2. Chouteau L. S.: Pin Hood Bridge, 6 miles from Sedalia, Missouri.

#### Solenocheilus collectus Meek and Worthen.

1870. Nautilus (Solenocheilus) collectus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 48.

St. Louis L. S.: New Providence, Indiana.

1873. Nautilus (Solenocheilus) collectus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 544, pl. 23, figs. 3, 4.

St. Louis Group: Greencastle, Indiana, near Waterloo, Monroe County, Illinois.

1893. Solenocheilus collectus. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 463, figs. 31, 32.

Carboniferous: Ballinger, Texas.

#### Solenocheilus henryvillense Miller and Gurley.

1897. Solenocheilus henryvillense. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 51, pl. 4, figs. 4-6.

Knobstone Group: Near Henryville, Indiana.

#### Solenocheilus indianense Worthen.

1890. Solenocheilus indianense. Worthen, Geol. Surv. Ill., vol. 8, p. 150, pl. 28, figs. 1, 1a.

St. Louis L. S.: Greencastle, Indiana.

1893. Solenocheilus indianensis. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 465.

#### Solenocheilus kentuckiensis Hvatt.

1893. Solenocheilus kentuckiensis. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 461, figs. 28-30.

Carboniferous: Edmonson County, Kentucky.

#### Solenocheilus leidvi Meek and Worthen.

1865. Nautilus (Cryptoceras?) Leidyi. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 262.

Keokuk Group: Warsaw, Illinois.

1873. Nautilus (Solenocheilus) Leidyi. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 524, pl. 18, fig. 2.

Keokuk Group: Warsaw, Illinois.

# Solenocheilus rockfordensis. See Oncodoceras rockfordense.

# SOLENOMYA Lamark, 1818.

#### Solenomya anodontoides Meek.

1875. Solenomya?? anodontoides. Meek, Pal. Ohio, vol. 2, p. 339, pl. 19, fig. 11.

Coal Measures: Newark, Ohio.

# Solenomya anodontoides Meek-Continued.

1866. Solenomya anodontoides. Claypole, Proc. and Call. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, pp. 241-247.

Lower Coal Measures: Wilkesbarre, Pennsylvania.

1887. Solenomya? anodontoides. Herrick, Bull. Den. Univ., vol. 2, p. 29, pl. 4, fig. 10.

Coal Measures: Flint Ridge, Ohio.

# Solenomya biarmica de Verneuil.

1858. Solemya Biarmica? Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 190. Upper Permian: Near Council Grove, Kansas.

# Solenomya curta Walcott.

1884. Solenomya curta. Walcott, Pal. Eureka Dist., p. 242, pl. 22, figs. 6-11. Lower Carboniferous: Eureka District, Nevada.

# Solenomya cuyahogensis Herrick.

1888. Solenomya?? cuyahogeneis. Herrick, Bull. Den. Univ., vol. 4, p. 115, pl. 10, fig. 1.

Waverly Group: Cuyahoga Falls, Ohio.

1895. Solenomys (†) Cuyahogeneis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 22, fig. 25. Cuyahoga Shale: Cuyahoga Falls, Ohio, 30 feet below conglomerate.

### Solenomya iowensis Worthen.

1884. Solenomya? iowensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 13. St. Louis L. S.: Near Pella, Iowa.

1890. Solenomya? iowensis. Worthen, Geol. Surv. III., vol. 8, p. 132, pl. 19, figs. 5, 5a.

St. Louis L. S.: Near Pella, Iowa.

### Solenomya meekiana Herrick.

1887. Solenomya (?) meekiana. Herrick, Bull. Den. Univ., vol. 2, p. 30, pl. 4, fig. 9. Coal Measures: Flint Ridge, Ohio.

#### Solenomya monroensis Worthen.

1884. Solenomya monroensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 13.
Oolite beds of St. Louis L. S.: Fountain Creek, Monroe County, Illinois.

1890. Solenomya monroensis. Worthen, Geol. Surv. Ill., vol. 8, p. 131, pl. 18, figs. 5, 5a.

St. Louis L. S. (oolite): Fountain Creek, Monroe County, Illinois.

# Solenomya radiata Meek and Worthen.

1860. Solemya radiata. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 457. Coal Measures: Grayville, Illinois.

1866. Solenomya radiata. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 349, pl. 26, figs. 10a, b.

Coal Measures: Schuyler County, Illinois.

#### Solenomya recurvata Swallow.

1858. Solemya (†) recurvata. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 208. Upper Coal Measures: Clifton Park, Kansas.

# Solenomya soleniformis Cox.

1857. Solenimya soleniformis. Cox, Geol. Rep. Ky., vol. 3, p. 573, pl. 9, fig. 5. Coal Measures: Union County, Kentucky.

1888. Solenomya soleniformis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 234. Lower Coal Measures: Des Moines, Iowa.

# Solenomya subradiata Herrick.

1887. Solenomya subradiata. Herrick, Bull. Den. Univ., vol. 2, p. 30, pl. 3, fig. 8. Coal Measures: Flint Ridge, Ohio.

# Selenomya varsoviensis Worthen.

- 1884. Solenomua vareoviensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 12. Keokuk L. S.: Warsaw, Illinois.
- 1890. Solenamya varsoviensis. Worthen, Geol. Surv. Ill., vol. 8, p. 131, pl. 19, fig. 8. Keokuk L. S.: Warsaw, Illinois.

# Solenomya (species undetermined).

- 1872. Solenomya sp. Meek, U.S. Geol. Surv. Nebr., pl. 2, figs. 12a, b. Upper Coal Measures: Rock Bluff, Nebraska.
- 1873. Solenomya (sp. undet). Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 27, figs. 1a, b.
- 1874. Solenomya (sp. undet). Meek, Am. Jour. Sci. (3), vol. 7, p. 582.

# SOLENOPSIS McCoy, 1844.

# Solenopsis permianus Swallow.

1858. Solen (?) Permianus. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 190. Upper Permian: Near Smoky Hill Fork, Kansas.

# Solenopsis scalpriformis Winchell.

- 1862. Solen scalpriformis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 422. Marshall Group: Marshall, Moscow, and near Napoleon, Michigan.
- 1869. Solen scalpriformis. Winchell, Safford's Geol. of Tenn., p. 445. Shales just above Black Shale: Hickman and Maury counties, Tennessee.
- 1870. Solon scalpriformis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 256. Waverly Group: Tennessee.

# Solenopsis solenoides Geinitz.

- 1866. Clidophorus solenoides. Geinitz, Carb. und Dyas in Nebr., p. 25, tab. 2, fig. 7. Nebraska City.
- 1872. Solenopsis solenoides. Meek, U. S. Geol. Surv. Nebr., p. 223, pl. 10, fig. 3. Upper Coal Measures: Nebraska City, Nebraska. Coal Measures: Illinois.
- 1894. Solenopsis solenoides. Keyes, Mo. Geol. Surv., vol. 5, p. 130. Upper Coal Measures: Kansas City, Missouri.

# SPATHELLA Hall, 1885.

# Spathella ventricosa White and Whitfield.

- 1862. Orthonota ventricosa. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 297. Chemung Group: Burlington, Iowa.
- 1885. Spathella ventricosa. Hall, Pal. N. Y., vol. 5, pt. 1, p. 408, pl. 66, figs. 41, 42. Yellow S. S.: Burlington, Iowa.
- 1888. Spathella ventricosa? Herrick, Bull. Den. Univ., vol. 4, p. 31, pl. 4, fig. 20. Middle Waverly Group: Ohio.
- 1889. Spathella ventricosa. Herrick, Am. Geol., vol. 3, pl. 2, fig. 20.
  1895. Spathella ventricosa. Herrick, Geol. Surv. Ohio, vol. 7, pl. 16, fig. 20. Keokuk: Granville, Ohio.

# SPHÆRODOMA Keyes, 1889.

# Sphærodoma cooperensis Swallow.

- 1863. Macrocheilus cooperensis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 100-Archimedes L. S.: Cooper County, Missouri.
- 1889. Sphærodoma cooperensis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 305.
- 1894. Soleniscus cooperensis. Keyes, Mo. Geol. Surv., vol. 5, p. 210. Keokuk L. S.: Cooper County, Missouri.

# Sphærodoma intercalaris Meek and Worthen.

- 1860. Macrocheilus intercalaris. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 467.
  - Upper Coal Measures: Springfield, Illinois.
- 1860. Macrocheilus pulchellus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 467.
  - Upper Coal Measures: Springfield, Illinois.
- 1866. Macrocheilus intercalaris. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 371, pl. 31, fig. 6a, b.
  - Upper Coal Measures: Springfield, Illinois; Pittsburg, Pa.
- 1872. Macrocheilus intercalaris var. pulchellus. Meek, U. S. Geol. Surv. Nebr., p. 228, pl. 6, fig. 8.

Upper Coal Measures: Near Nebraska City, Nebraska; Springfield, Illinois. Coal Measures: Pittsburg, Pennsylvania.

Lower Coal Measures: West Virginia.

# Sphærodoma littonana Hall.

- 1856. Natica littonana. Hall, Trans. Albany Inst., vol. 4, p. 30.
  - St. Louis L. S.: Bloomington, Indiana.
- 1882. Macrocheilus Littonanum. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 72, pl. 8, fig. 28.
  - St. Louis Group: Bloomington, Indiana.
- 1883. Macrocheilus? Littonanus. Hall, 12th Rep. Geol. Surv. Ind., p. 369, pl. 31, fig. 28.
  - St. Louis Group: Bloomington, Indiana.
- 1889. Sphærodoma littonana. Keyes, Proc. Acad. Nat. Sci. Phil., p. 305.

# Sphærodoma littonana var. genevievensis Meek and Worthen.

- 1866. Naticopsis Littonana var. genevievensis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 268.
  - Chester Group: Ste. Genevieve County, Missouri; Randolph County, Illinois.
- 1894. Spharodoma littonana. Keyes, Mo. Geol. Surv., vol. 5, p. 214. Kaskaskia L. S.: Ste. Genevieve, Missouri.

# Sphærodoma medialis Meek and Worthen.

- 1860. Macrocheilus medialis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 466.
  - Upper Coal Measures: Springfield, Illinois.
- 1866. Macrocheilus medialis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 370, pl. 31, figs. 5a, b.
  - Upper Coal Measures: Springfield, Illinois.
- 1884. Soleniscus † (Macrocheilus) medialis. White, Proc. U. S. Nat. Mus., vol. 6, p. 187, pl. 8, figs. 15, 16.
  Carboniferous: Indiana.
- 1884. Soleniscus † (Macrocheilus) medialis. White, 13th Rep. Geol. Surv. Ind., p. 156, pl. 34, figs. 15, 16.
  - Coal Measures: Vermilion County, Indiana.
- 1887. Macrocheilus sp. ? Herrick, Bull. Den. Univ., vol. 2, p. 21, pl. 2, fig. 16. (M. medialis in explanation of plate.) Coal Measures: Flint Ridge, Ohio.
- 1887. Soleniscus medialis. Herrick, Bull. Den. Univ., vol. 2, pl. 14, fig. 4. Coal Measures: Flint Ridge, Ohio.
- 1889. Spharodoma medialis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 306.
- 1891. Sphærodoma medialis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 262. Lower Coal Measures: Des Moines, Iowa.
- 1894. Spherodoma medialis. Keyes, Mo. Geol. Surv., vol. 5, p. 215.
  Upper Coal Measures: Kansas City and Clinton, Missouri.

# Sphærodoma pinguis Winchell.

- 1863. Macrocheilus pinguis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 21. Yellow S. S.: Burlington, Iowa.
- 1889. Sphaerodoma pinguis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 296. Kinderhook Group: Burlington, Iowa.
- 1889. Sphærodoma pinguis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 306.
- 1894. Sphaerodoma penguis. Keyes, Mo. Geol. Surv., vol. 5, p. 213. Burlington L. S.: Louisiana, Missouri.

## Sphærodoma ponderosa Swallow.

- 1858. Macrocheilus ponderosus. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 202. Upper Coal Measures: Valley of Verdigris River, Kansas.
- 1884. Soloniscus? (Macrocheilus) ponderosus? White, Proc. U. S. Nat. Mus., vol. 6, p. 187, pl. 8, figs. 1, 2.
  Carboniferous: Southern Iowa.
- 1884. Soleniscus? (Macrocheilus) ponderosus. White, 13th Rep. Geol. Surv. Ind., p. 156, pl. 34, figs. 1, 2. Upper Coal Measures: Iowa.
- 1888. Macrocheilus ponderosus. Herrick, Bull. Den. Univ., vol. 4, pl. 11, fig. 6.
  Coal Measures: Fultonham, Ohio.
- 1889. Sphærodoma ponderosa. Keyes, Proc. Acad. Nat. Sci. Phil., p. 306.
- 1894. Sphaerodoma ponderosa. Keyes, Mo. Geol. Surv., vol. 5, p. 213. Coal Measures: Kansas City, Missouri.

## Sphærodoma primogenia Conrad.

- 1835. Stylifer primogenia. Courad, Trans. Geol. Soc. Penn., vol. 1, pt. 2, p. 267, pl. 12, fig. 2.
- 1836. Fusus? inhabilis. Morton, Am. Jour. Sci. (1), vol. 24, p. 150, pl. 3, fig. 14. Coal Measures: Ohio Valley.
- 1855. Macrocheilus inhabilis. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil., (2), vol. 2, p. 76, pl. 9, figs. 9a, b. Coal Measures: Graysville and Galatia, Illinois; Posey County. Indiana.
- 1858. Macrocheilus primogenius. Hall, Geol. Iowa, vol. 1, pt. 2, p. 720, pl. 29, fig. 11.
  - Coal Measures: Ohio, Indiana, Illinois, and Iowa.
- 1884. Soleniscus? (Macrocheilus) primigenius? White, Proc. U. S. Nat. Mus., vol. 6, p. 187, pl. 8, fig. 3.
  Carboniferous: Illinois.
- 1884. Soleniscus? (Macrocheilus) primigenius. White, 13th Rep. Geol. Surv. Ind., p. 157, pl. 34, fig. 3.
  Coal Measures: Ohio, Indiana, Illinois, and Iowa.
- 1886. Macrocheilus primigenius. Heilprin, 2d Geol. Surv. Penn., Ann. Rep. fcr 1885, p. 446, fig. 16; p. 457, fig. 16a. Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.
- 1886. Macrocheilus primigenius. Heilprin, Proc. and Coll. Wyo. Hist. and Geol. Soc., vol. 2, pt. 2, p. 274, fig. 16; p. 276, fig. 16a.
  Mill Creek L. S., Upper Coal Measures: Wilkesbarre, Pennsylvania.
- 1889. Sphærodoma primogenia. Keyes, Proc. Acad. Nat. Sci. Phil., p. 306.
- 1894. Sphærodoma primogenia. Keyes, Mo. Geol. Surv., vol. 5, p. 215. Upper Coal Measures: Kansas City, Missouri.
- 1897. Macrocheilus (Soloniscus) primigenius. Smith, Proc. Am. Phil. Soc., vol. 35, p. 41.
  - Lower Coal Measures: Conway County, Arkansas.

### Sphærodoma subcorpulenta Whitfield.

1882. Macrocheilus subcorpulentus. Whitfield, Ann. N. Y. Acad. Sci., vol. 2, p. 224.

Maxville L. S.: Newtonville, Ohio.

# Sphærodoma subcorpulenta Whitfield—Continued.

1889. Spherodoma subcorpulents. Keyes, Proc. Acad. Nat. Sci. Phil., p. 306.

1891. Macrocheilus subcorpulentus. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 591, pl. 14, fig. 14.

Maxville L. S.: Newtonville, Ohio.

1895. Macrocheilus subcor ulentus. Whitfield, Geol. Surv. Ohio, vol. 7 p. 478, pl. 10, fig. 14.

Maxville L. S.: Newtonville, Ohio.

## Sphærodoma texana Shumard.

1859. Macrocheilus Texanus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 402. Coal Measures: Four miles west of Sierra Hueco, El Paso County, Texas.

1884. Soleniscus (Macrocheilus) texanus. White, Proc. U. S. Nat. Mus.. vol. 6, p. 187, pl. 8, figs. 13, 14.

Coal Measures: Illinois.

1884. Solenisous (Macrocheilus) Texanus. White, 18th Rep. Geol. Surv. Ind., p. 155, pl. 34, figs. 13, 14.

Coal Measures: Danville, Illinois.

1889. Sphærodoma texana. Keyes, Proc. Acad. Nat. Sci. Phil., p. 306.

## Sphærodoma (species undetermined).

1866. Macrocheilus (undt). Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 372, pl. 27, fig. 10.

Upper Coal Measures: Bridge over north branch of Saline River, Gallatin County, Illinois.

## (SPHENOPOTERIUM Meek and Worthen, 1860.)

Sphenopoterium compressum Meek and Worthen. See Palæacis compressus.

Sphenopoterium cuneatum Meek and Worthen. See Palæacis cuneiformis.

Sphenopoterium enorme Meek and Worthen. See Palæacis enormis.

Sphenopoterium enorme var. depressum Meek and Worthen. See Palæacis enormis var. depressus.

Sphenopoterium obtusum Meek and Worthen. See Palæacis obtusus.

### SPHENOTUS Hall, 1885.

#### Sphenotus æolus Hall.

\*1870. Sanguinolites Eolus. Hall, Prelim. Not. Lamell., 2, p. 46. Waverly S. S.: Newark, Ohio.

1875. Sanguinolites colus. Meek, Pal. Ohio, vol. 2, p. 307, pl. 16, figs. 1a-c. Cuyahoga Shale: Medina County and Newark, Ohio.

1884. Sanguinolites Lolus. Walcott, Pal. Eureka Dist., p. 247, pl. 20, figs. 6, 7, 9. Lower Carboniferous: Eureka District, Nevada.

1885. Sphenotus Æolus. Hall, Pal. N. Y., vol. 5, pt. 1, p. 404, pl. 66, figs. 31-35.
Waverly S. S.: Newark, Ohio.

1888. Sanguinolites acolus. Herrick, Bull. Den. Univ., vol. 3, p. 70, pl. 8, figs. 1, 11. Waverly Group: Licking County, Ohio.

### Sphenotus contractus Hall.

1843. Cypricardia contracta. Hall, Geol. Surv. N.Y., Rep. 4th Dist., p. 292, tab. 139, fig. 4.

Near Panama, Chautauqua County, New York.

Bull, 153----37

### Sphenotus contractus Hall—Continued.

- 1885. Sphenotus contractus. Hall, Pal. N. Y., vol. 5, pt. 1, p. 399, pl. 66, figs. 1, 3-9, 11-13, 15 (10, 16, 17, 19†), pl. 94, fig. 2.
  - Chemung Group: New York and Pennsylvania.
- 1888. Sanguinolites (Sphenotus) contractus. Herrick, Bull. Den. Univ., vol. 3, p. 69, pl. 12, fig. 4.
  - Waverly Group: Licking County, Ohio.
- 1888. Sphenotus contractus. Herrick, Bull, Den. Univ., vol. 4, p. 31.
  - Waverly Group: Ohio.
- 1895. Sphenotus contractus. Herrick, Geol. Surv. Ohio, vol. 7, pl. 23, fig. 22. Cuyahoga Shale: Moot's Run, Ohio.

# Sphenotus flavius Hall.

- \*1870. Sanguinolites † flavius. Hall, Prelim. Not. Lamell., 2, p. 47.
  - Waverly S. S.: Licking County, Ohio.
- 1885. Sphenotus flavius. Hall, Pal. N. Y., vol. 5, pt. 1, p. 403, pl. 66, figs. 27-29. Waverly S. S.: Licking County, Ohio.
- 1888. Sanguinolites (Sphenotus) flavius? Herrick, Bull. Den. Univ., vol. 3, p. 69, pl. 9, fig. 10.

Waverly Group: Licking County, Ohio.

# Sphenotus rigidus White and Whitfield.

- 1862. Cypricardia? rigida. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 300.
  - Chemung Group: Burlington, Iowa.
- 1870. Cypricardia (†) rigida. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 256. Waverly Group: Newark, Ohio.
- 1885. Sphenotus rigidus. Hall, Pal. N. Y., vol. 5, pt. 1, p. 402, pl. 66, fig. 14. Yellow S. S.: Burlington, Iowa.

#### Sphenotus signatus Hall.

1885. Sphenotus signatus. Hall, Pal. N. Y., vol. 5, pt. 1, p. 405, pl. 94, fig. 3. Waverly Group: Warren, Pennsylvania.

#### Sphenotus sinuatus Miller and Gurley.

1896. Sphenotus sinuatus. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 9, pl. 2, figs. 29, 30.

Chouteau L. S.: Near Sedalia, Missouri.

## Sphenotus telamon Hall.

1885. Sphenotus Telamon. Hall, Pal. N. Y., vol. 5, pt. 1, p. 406, pl. 94, fig. 1. Chouteau L. S.: Cooper County, Missouri.

#### Sphenotus valvulus Hall.

- \*1870. Sanguinolites valvulus. Hall, Prelim. Not. Lamell., 2, p. 46. Waverly S. S.: Newark, Ohio.
  - 1885. Sphenotus valvulus. Hall, Pal. N. Y., vol. 5, pt. 1, p. 403, pl. 66, fig. 30. Waverly S. S.: Newark, Licking County, Ohio.
- 1888. Sphenotus valvulus. Herrick, Bull. Den. Univ., vol. 4, pl. 4, fig. 1. Waverly Group: Ohio.
- 1889. Sphenotus valvulus. Herrick, Am. Geol., vol. 3, pl. 2, fig. 1. 1895. Sphenotus valvulus. Herrick, Geol. Surv. Ohio, vol. 7, pl. 16, fig. 1. Upper Cuyahoga Shale: Ohio.

# Sphenotus (species undetermined).

- 1888. Sphenotus (Cypricardia). Herrick, Bull. Den. Univ., vol. 4, pl. 6, fig. 4. Waverly Group: Ohio.
- 1895. Sphenotus (Cypricardia?) sp. Herrick, Geol. Surv. Ohio, vol. 7, pl. 17, fig. 4. Upper Cuyahoga Shale: Licking County, Ohio.

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#### SPHRAGIOPORA Ulrich, 1890.

### Sphragiopora parasitica Ulrich.

1890. Sphragiopora parasitica. Ulrich, Geol. Surv. III., vol. 8, p. 638, pl. 65, figs. 6, 6a.

Chester Group: Chester, Illinois.

1894. Sphrogropora parasitica. Keyes, Mo. Geol. Surv., vol. 5, p. 33. Kaskaskia L. S.: Chester, Illinois.

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# SPIRIFER Sowerby, 1815.

## Spirifer aciculiferus. See Spiriferina aciculifera.

# Spirifer acuticostatus De Koninck.

1843. Spirifer acuticostatus. De Koninck, Desc. Anim. Foss. Carb. Terr. Belg., p. 265, pl. 17, figs. 6 a-c.

1863. Spirifera acuticostata. Davidson, Quart. Jour. Geol. Soc. Lond., vol. 19, p. 171, pl. 9, figs. 7, 8.

Lower Carboniferous L. S.: Brookfield, Shubenacadie, etc., Nova Scotia.

1868. Spirifer acuticostata. Dawson, Acad. Geol., p. 292, fig. 91.

Carboniferous L. S.: Brookfield, Shubenacadie, etc., Nova Scotia.

#### Spirifer agelaius Meek.

1873. Spirifer agelaius. Meek, U. S. Geol. Surv. Mont., Idaho, Wyo., and Utah, p. 470.

Carboniferous: "Old Baldy," near Virginia City, Montana.

1880. Spirifer agelaius. White, Cont. to Inv. Pal., No. 6, p. 135, pl. 34, figs. 10a, b. Carboniferous: "Old Baldy" Mountain, Virginia City, Montana.

## Spirifer albapinenensis Hall and Whitfield.

1877. Spirifera Alba-pineneis. Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 255, pl. 4, figs. 7, 8.

Near base of Wahsatch L. S.: Dry Canyon, Oquirrh Mountains, Logan and Ogden Canyons, Wahsatch range, Utah.

Carboniferous: White Pine District, Nevada.

# Spirifer annectans Walcott.

1884. Spirifera annectans. Walcott, Pal. Eureka Dist., p. 216, pl. 18, figs. 7, 7a. Lower Carboniferous: Eureka District, Nevada.

Spirifer attenuatus. See Spirifer keokuk.

## Spirifer bifurcatus Hall.

1856. Spirifer bifurcata. Hall, Trans. Albany Inst., vol. 4, p. 8. St. Louis L. S.: Spergen Hill, Indiana.

1882. Spirifera bifurcata. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 47, pl. 6, figs. 13-15.

St. Louis Group: Spergen Hill, Indiana.

1883. Spirifera bifurcata. Hall, 12th Rep. Geol. Surv. Ind., p. 326, pl. 29, figs. 13-15.

St. Louis Group: Spergen Hill, Indiana.

## Spirifer biplicatus Hall.

1858. Spirifer biplicatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 519, pl. 7, figs. 5a, b. Chemung Group: Burlington, Iowa; Quincy, Illinois.

1870. Spirifera biplicata? Winchell, Proc. Am. Phil. Soc., vol. 11, p. 252. Waverly Group: Sciotoville, Ohio.

1875. Spirifer (Trigonotreta) biplicatus?? Meek, Pal. Ohio, vol. 2, p. 290, pl. 14, fig. 5.

Waverly Group: Richfield, Ohio.

## Spirifer oiplicatus Hall-Continued.

- 1888. Spirifer biplicatus. Herrick, Bull. Den. Univ., vol. 3, p. 45.
  - Waverly Group: Licking County, Ohio.
- 1888. Spirifer biplicatus. Herrick, Bull. Den. Univ., vol. 4, p. 25, pl. 2, fig. 8; pl. 10, figs. 17, 18.
  - Waverly Group: Cuyahoga Falls, Ohio.
- 1895. Spirifer biplicatus. Herrick, Geol. Surv. Ohio, vol. 7, pl. 15, fig. 8.
  Upper Layers of Waverly Group: Newark, Ohio.

# Spirifer boonensis Swallow.

1860. Spirifer Boonensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 646.
Lower Coal Measures: Boone, Randolph, and Monroe counties, Missouri.

# Spirifer cameratus Morton.

- 1836. Spirifer cameratus. Morton, Am. Jour. Sci. (1), vol. 29, p. 150, pl. 2, fig. 3
  Coal Measures: Ohio Valley.
- 1852. Spirifer triplicata. Hall, Stansb. Exped. Gt. Salt Lake, p. 410, pl 4, figs. 5a-e.
  - Carboniferous: Missouri River above Weston.
- 1852. Spirifer faeciger? Owen, Geol. Rep. Wis., Iowa, and Minn., tab. 5, fig. 4. Carboniferous: Missouri River, near mouth of Keg Creek, and Platteburg, Missouri.
- 1852. Spirifer meusebachanus. Roemer, Kreid. von Texas, p. 88, taf. 11, figs. 7a-c. Carboniferous: San Saba Valley, about 20 miles below the old Spanish Forts, Texas.
- 1856. Spirifer cameratus. Hall, Pac. R. R. Rep., vol. 3, p. 102, pl. 2, figs. 9, 12, 13. Carboniferous: Pecos Village, New Mexico.
- 1858. Spirifer cameratus. Hall, Geol. Iowa, vol. 1, pt. 2, pl. 709, pl. 28, figs. 2a, b. Coal Measures: Ohio; Illinois; Iowa; Missouri; Nebraska; Santa Fé and Pimas Village, New Mexico.
- 1859. Spirifer cameratus. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 27. Upper Coal Measures: Kansas.
- 1859. Spirifer cameratus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 391. Permian S. S. and White L. S.: Guadalupe Mountains.
- Spirifer cameratus. Newberry, Ives's Colo. Expl. Exped., p. 127.
   Upper Carboniferous L. S.: Santa Fé and Pecos Village, New Mexico.
- 1868. Spirifer. Rogers, Geol. Rep. Penn., p. 833, fig. 694.
- 1872. Spirifer cameratus. Meek, U. S. Geol. Surv. Nebr., p. 183, pl. 6, fig. 12; pl. 8, fig. 15.
  - Upper Coal Measures: Nebraska City, Nebraska.
  - Coal Measures: Eastern Ohio; West Virginia; Pennsylvania; Iowa; Kansas; Texas; New Mexico.
- 1873. Spirifer cameratus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 573, pl. 25, fig. 7.
  - Coal Measures: Illinois.
- 1873. Spirifer, young of S. cameratus? Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 25, figs. 6a-c.
  Coal Measures.
- 1874. Spirifera camerata. Derby, Bull. Cornell Univ. (Sci.), vol. 1, No. 2, p. 12, pl. 1, figs. 1, 3, 6, 9, 14; pl. 2, figs. 2, 15; pl. 4, fig. 5; pl. 5, fig. 11.
   Coal Measuree: Bomjardim and Itaitúba, Brazil.
- 1876. Spirifer cameratus. White, Powell's Rep. Geol. Unita Mts., p. 90.

  Lower Aubrey Group: Confluence of Grand and Green rivers, Utah.
- 1876. Spirifer cameratus. Newberry, U. S. Expl. Exped., Santa F6 to Grand and Green rivers, p. 138.
  - Upper Carboniferous: New Mexico and Utah.
- 1876. Spirifer camerata. Meek, Simpson's Expl. Gt. Basin Utah, p. 353, pl. 2, figs. 3a, b.

# Spirifer cameratus Morton-Continued.

- Yellow L. S. (Upper Carboniferous?): Summit Spring Pass, east of Zuny Valley, etc.
- 1877. Spirifer (Trigonotreta) cameratus. Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 91, pl. 9, figs. 2, 2a.
  - Carboniferous L. S.: Fossil Hill, White Pine District; Ruby Group, Nevada. Also, latitude 39° 33' north, longitude 115° 12' west.
- 1877. Spirifer cameratus. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 132, pl. 10, figs. 1a-d.
  - Carboniferous: Fossil Hill, White Pine County; Ely range; Old Potosi Mine, Lincoln County; and Egan range, 35 miles south of Egan Pass, Nevada; Camp Apache, Maricopa County; Salt River; confluence of White Mountain and Black Rivers; and Canyon Butte, Arizona, Oquirrh range, near Camp Floyd; Lake range on Fairfield road; west face of Oquirrh range; north Fork of Lewiston Canyon, Oquirrh range; cliff east of Bellevue; Meadow Creek, south of Fillmore; North Star District, Pleacho range; near Beekwith Spring, Cedar range; Rock Canyon, Wasatch range, near Provo; and Virgin range, southwest of Saint George, Utah.
- 1881. Spirifer cameratus. White, 2d Ann. Rep. Dept. Stat. and Geol. Ind., p. 517, pl. 8, fig. 3.
  Coal Measures: Waterman, Parke County, Indiana.
- 1883. Spirifera camerata. Hall, Rep. N. Y. State Geol. for 1882, pl. (32) 57, figs. 9-15.
- Coal Measures: Ohio; Illinois; Iowa; Missouri, etc.

  1884. Spirifer cameratus. White, 13th Rep. Geol. Surv. Ind., p. 132, pl. 35, figs. 3-5.

  Coal Measures: Indiana.
- 1887. Spirifera camerata. Herrick, Bull. Den. Univ., vol. 2, p. 45, pl. 2, fig. 22.
  Coal Measures: Flut Ridge, Ohio.
- 1888. Spirifera camerata. Keyes, Proc. Acad. Nat. Sci. Phil., p. 230. Lower Coal Measures: Des Moines, Iowa.
- 1894. Spirifer cameratus. Hall and Clarke, Int. Study of Brach., pt. 2, pl. 26, figs. 7, 8.
  - Coal Measures: Missouri; Illinois.
- 1894. Spirifera camerata. Keyes, Mo. Geol. Surv., vol. 5, p. 83, pl. 40, figs. 5a-c. Coal Measures: Clinton, Kansas City, and Lexington, Missouri.
- 1895. Spirifer cameratus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 32, figs. 9-15. Coal Measures: Ohio and Illinois.
- 1897. Spirifer cameratus. Smith, Proc. Am. Phil. Soc., vol. 35, p. 31.
  Upper Coal Measures: Sebastian County, Arkansas; Poteau Mountains, Indian Territory.
  Lower Coal Measures: Conway County, Arkansas.
- Spirifer cameratus var. kansasensis Swallow.
  - 1866. Spirifer cameratus var. kansaseneis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 409.
    Upper Coal Measures: Kansas.
- Spirifer cameratus var. percrassus Swallow.
  - 1866. Spirifer cameratus var. percrassus. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 409.
    Upper Coal Measures: Missouri and Kansas.
- Spirifer carteri. See Syringothyris carteri and Syringothyris textus. Spirifer centronatus Winchell.
  - 1865. Spirifera centronata. Winchell, Proc. Acad. Nat. Sci. Phil., p. 118. Marshall Group: Cuyahoga Falls and Akron, Ohlo.

#### Spirifer centronatus Winchell—Continued.

1874. Spirifer centronata. White, Prelim. Rep. Inv. Foss., p. 17.
Subcarboniferous: Mountain Spring, Old Mormon Road, Nevada.

1877. Spirifer centronatus. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 86, pl. 5, figs. 8a-c.

Subcarboniferous: Mountain Spring, Old Mormon Road, Nevada.

1877. Spirifora centronata. Hall and Whitfield, U.S. Geol. Expl. 40 Par., vol. 4, p. 254, pl. 4, figs. 5, 6.

Near base of Wahsatch L. S. (Waverly ?): Dry Canyon, Oquirrh Mountains; Logan and Ogden Canyons, Wahsatch range, Utah.

Spirifer clarus. See Reticularia clara.

# Spirifer clavatulus McChesney.

1861. Spirifer clavatala. McChesney, Desc. New Pal. Foss., p. 84. Burlington L. S.: Burlington, Iowa.

1865. Spirifer clavatula. McChesney, Ill. New Spec. Foss., pl. 6, figs. 5a, b.

1868. Spirifera clavatula. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 36, pl. 6, figs. 5a, b.
Burlington L. S.: Burlington, Iowa.

Spirifer contractus. See Martinia contracta.

Spirifer cooperensis. See Reticularia cooperensis.

Spirifer cuspidatus. See Syringothyris carteri.

# Spirifer deltoideus Herrick.

1888. Spirifer deltoideus. Herrick, Bull. Den. Univ., vol. 4, p. 27, pl. 2, fig. 7. Waverly Group: Granville, Ohio.

1895. Spirifor deltoideus. Herrick, Geol. Surv. Ohio, vol. 7, pl. 15, fig. 7. Waverly Conglomerate (Kinderhook): Granville, Ohio.

## Spirifer desideratus Walcott.

1884. Spirifera desiderata. Walcott, Pal. Eureka Dist., p. 217, pl. 7, fig. 8.
Lower Carboniferous: Eureka District, Nevada.

### Spirifer duplicicostus Phillips.

1836. Spirifera duplicicosta. Phillips, Geol. Yorksh., vol. 2, p. 218, pl. 10, fig. 1. Carboniferous: England.

1878. Spirifera duplicicosta. Etheridge, Quart. Jour. Geol. Soc. Lond., vol. 34, p. 628.
Carboniferous L. S.: Feilden Isthmus, latitude 82° 43'.

Spirifer extenuatus. See Syringothyris extenuatus.

Spirifer fasciger. See Spirifer cameratus.

#### Spirifer fastigatus Morton.

1836. Spirifer fastigatus. Morton, Am. Jour. Sci. (1), vol. 29, p. 152, pl. 14, fig. 35. Coal Measures: Ohio Valley.

Spirifer fastigatus Meek and Worthen. See Spirifer mortonanus.

## Spirifer fimbriatus Morton.

1836. Spirifer fimbriatus. Morton, Am. Jour. Sci. (1), vol. 29, p. 150, pl. 2, fig. 1.
Coal Measures: Ohio Valley.

#### Spirifer forbesi Norwood and Pratten.

1855. Spirifer Forbesii. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 73, pl. 9, figs. 3a-c.

Middle of Mountain L. S.: Burlington, Iowa.

1858. Spirifer forbesi. Hall, Geol. Iowa, vol. 1, pt. 2, p. 600, pl. 13, fig. 1. Burlington L. S.: Burlington, Iowa.

## Spirifer forbesi Norwood and Pratten-Continued.

1894. Spirifera forbesi. Keyes, Mo. Geol. Surv., vol. 5, p. 80, pl. 40, fig. 3.
Burlington L. S.: Hannibal, Louisiana, Sedalia, and Springfield, Missouri.

1895. Spirifer Forbesi. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 37, fig. 18. Burlington L. S.: Burlington, Iowa.

#### Spirifer fultonensis Worthen.

1873. Spirifer Fultonensis. Worthen, Geol. Surv. Ill., vol. 5, p. 572, pl. 25, fig. 5.
Lower Coal Measures: Fulton County, Illinois.

Spirifer glabrus. See Martinia glabra.

Spirifer glabrus var. contractus. See Martinia contractus.

# Spirifer grimesi Hall.

1858. Spirifer grimesi. Hall, Geol. Iowa, vol. 1, pt. 2, p. 604, pl. 14, figs. 1-5. Burlington L. S.: Burlington, Iowa; Quincy and Jersey Landing, Illinois.

1878. Spirifera sp. allied to S. Grimesi Hall. Etheridge, Quart. Jour. Geol. Soc. Lond., vol. 34, p. 628, pl. 25, fig. 5.
Carboniferous: Feilden Isthmus, latitude 82° 43'.

1883. Spirifera Grimesi. Hall, Rep. N. Y. State Geol. for 1882, pl. (31) 56, figs. 8, 16-19.

Burlington L. S.: Burlington, Iowa.

1894. Spirifera grimesi. Keyes, Mo. Geol. Surv., vol. 5, p. 79.

Chouteau L. S.: Hannibal, Louisiana, and Sedalia, Missouri.
Burlington L. S.: Palmyra, Hannibal, Louisiana, Sedalia, Springfield, and

Ste. Genevieve, Missouri.

1895. Spirifer Grimesi. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 30, figs. 8, 16-19.

Burlington L. S.: Burlington, Iowa.

Spirifer guadalupensis. See Reticularia guadalupensis.

Spirifer hannibalensis. See Syringothyris carteri.

Spirifer hemiplicata. See Enteletes hemiplicata.

Spirifer hirtus. See Reticularia cooperensis.

### Spirifer imbrex Hall.

1858. Spirifer imbrex. Hall, Geol. Iowa, vol. 1, pt. 2, p. 601, pl. 13, fig. 2. Burlington L. S.: Burlington, Iowa.

1883. Spirifera imbrar. Hall, Rep. N. Y. State Geol. for 1882, pl. (31) 56, figs. 11, 12.

Burlington L. S.: Burlington, Iowa.

1894. Spirifer imbrex. Hall and Clarke, Int. Study of Brach., pt. 2, pl. 27, fig. 1. Burlington L. S.: Burlington, Iowa.

1894. Spirifera imbrex. Keyes, Mo. Geol. Surv., vol. 5, p. 80. Burlington L. S.: Hannibal and Louisiana, Missouri.

1895. Spirifer imbrex. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 31, figs. 11, 12. Burlington L. S.: Burlington, Iowa.

#### Spirifer inæquicostus Owen.

1852. Spirifer inequicostis. Owen, Geol. Rep. Wis., Iowa, and Minn., p. 586, tab. 5, fig. 6.
Carboniferous L. S.: Iowa.

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## Spirifer incertus Hall.

1858. Spirifer incertus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 602, pl. 13, fig. 3. Burlington L. S.: Burlington, Iowa.

#### Spirifer increbescens Hall.

1858. Spirifer increbescens. Hall, Geol. Iowa, vol. 1, pt. 2, p. 706, pl. 27, figs. 8 a-t. Kaskaskia L. S.: Kaskaskia and Chester, Illinois.

#### Spirifer increbescens Hall—Continued.

1883. Spirifora increbescens. Hall, Rep. N. Y. State Geol. for 1882, pl. (30) 55, figs. 27-30, pl. (31) 56, figs. 1-3.

Chester L. S.: Illinois.

1888. Spirifer increbescens. Herrick, Bull. Den. Univ., vol. 4, pl. 11, fig. 14, 23. Chester L. S.: Ohio.

Coal Measures: Licking County, Ohio.

1894. Spirifer increbescens. Hall and Clarke, Int. Study of Brach., pt. 2, pl. 27 figs. 8-11.

Chester L. S.: Chester, Illinois.

1894. Spirifera increbescene. Keyes, Mo. Geol Surv., vol. 5, p. 82. Kaskaskia L. S.: Ste. Mary, Missouri.

1895. Spirifer increbescens. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 30, figs. 27-30, pl. 31, figs. 1-3.

Chester L. S.: Chester, Illinois.

## Spirifer increbescens var. americana Swallow.

1866. Spirifer increbescens var. Americana. Swallow, Trans. St. Louis Acad. Soi., vol. 2, p. 410.

Kaskaskia L. S.: Missouri and Illinois.

## Spirifer increbescens var. transversalis Hall.

\*1858. Spirifer increbescens var. transversalis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 708
Kaskaskia L. S.

# Spirifer keilhavii von Buch.

1855. Spirifer Keilhavii. Salter, Belcher's "Last of the Arctic Voyages," p. 386, pl. 36, figs. 9-11.
Carboniferous: Depot Point, Exmouth Island.

## Spirifer kelloggi Swallow.

1863. Spirifer Kelloggi. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 86. Lower Keokuk L. S.

1894. Spirifera kelloggi. Keyes, Mo. Geol. Surv., vol. 5, p. 81. Keokuk L. S.: Keokuk, Iowa.

## Spirifer kentuckensis. See Spiriferina kentuckensis.

Spirifer kentuckensis var. propatulus. See Spiriferina kentuckensis var. propatulus.

#### Spirifer keokuk Hall.

1852. Spirifer attenuatus. Owen, Geol. Rep. Wis., Iowa., and Minn., tab. 5, tab. 3A, fig. 8.

Lower Carboniferous L. S.: Skunk River, Iowa.

Carboniferous L. S.: Keokuk Rapids of the Mississippi.

1858. Spirifer keokuk. Hall. Geol. Iowa, vol. 1, pt. 2, p. 642, pl 20, figs. 3a-d, 2d. Keokuk L. S.: Keokuk, Iowa; Nauvoo and Warsaw, Illinois.

1858. Spirifer keokuk var. Hall, Geol. Iowa, vol. 1, pt. 2, p. 676, pl 24, figs. 4a-d. St. Louis L. S.: Mouth of Lizard Creek, Webster County, Iowa.

1876. Spirifer Keokuk (\*). Meek, Bull. U. S. Geol. and Geog. Surv. Terr., vol. 2, p. 355, pl. 1, figs. 3, 3a.

Carboniferous: Kootenay Range of Rocky Mountains.

1883. Spirifera Keokuk. Hall. Rep. N. Y. State Geol. for 1882, pl. (30) 55, figs. 21-24.

Keokuk and St Louis L. S.: Keokuk, Iows; Lizard Creek, Iows; Marion County, Iows.

1888. Spirifer keokuk. Herrick, Bull. Den. Univ., vol. 4, p 114. Waverly Group: Rushville and Loudonville, Ohio.

#### Spirifer keokuk Hall-Continued.

- 1891. Spirifer Rockymontana? Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 584, pl. 13, fig. 20.
  - Maxville L. S.: Newtonville, Ohio.
- 1894. Spirifer Keokuk. Hall and Clarke, Int. Study of Brach., pt. 2, pl. 27, figs. 14, 15.

Keokuk Group: Keokuk, Iowa.

- 1894. Spirifera keokuk. Keyes, Mo. Geol. Surv., vol. 5, p. 81, pl. 40, fig. 2. Keokuk L. S.: Wayland, Missouri; Keokuk, Iowa.
- 1895. Spirifera Rockymontana? Whitfield, Geol. Surv. Ohio, vol. 7, p. 471, pl. 9, fig. 20.
  - Maxville L. S.: Newtonville, Ohio.
- 1895. Spirifer Keokuk. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 30, figs. 21-24. Keokuk Group: Keokuk, Lizard Creek, and Marion County, Iowa.
- 1895. Spirifer Kookuk var. f Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 37, figs. 13-15.
  - St. Louis Group: Southern Indians?
- 1897. Spirifer kookuk. Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 257, pl. 18, figs. 10-12.

Batesville S. S.: Batesville, Arkansas.

## Spirifer keokuk var. shelbyensis Swallow.

1866. Spirifer Keokuk var. Shelbyensis. Swallow, Trans.St. Louis Acad. Sci., vol. 2, p. 410.

Archimedes L. S.: Shelby County, Missouri.

## Spirifer lævigatus. See Spirifer logani.

Spirifer laminosus. See Spiriferina kentuckensis.

#### Spirifer lateralis Hall.

- 1858. Spirifer lateralis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 661, pl. 23, figs. 7a-c. Warsaw L. S.: Clifton, Illinois.
- 1883. Spirifera lateralis? Hall, Rep. N. Y. State Gool. for 1882, pl. (32) 57, figs. 1-3.

Warsaw L. S.: Warsaw, Illinois.

1895. Spirifer lateralis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 32, figs. 1-3; pl. 37, fig. 19.
Warsaw L. S.: Warsaw and Clifton, Illinois.

# Spirifer latior Swallow.

1863. Spirifer latior. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 86. Chouteau L. S.: Cooper County, Missouri.

# Spirifer leidyi Norwood and Pratten.

- Spirifer Leidyi. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 72, pl. 9, figs. 2a-c.
   Upper Mountain L. S.: Chester, Illinois.
- 1883. Spirifera Leidyi. Hall, Rep. N. Y. State Geol. for 1882, pl. (30) 55, figs. 25, 26. Chester L. S.: Chester, Illinois.
- 1884. Spirifera Leidyi. Walcott, Pal. Eureka Dist., p. 216, pl. 18, figs. 4, 4a. Lower Carboniferous: Eureka District, Nevada.
- 1894. Spirifer Leidyi. Hall and Clarke, Int. Study of Brach., pt. 2, pl. 27, figs. 16, 17.

Chester L. S.: Chester, Illinois.

1894 Spirifera leidyi. Keyes, Mo. Geol. Surv., vol. 5, p. 82. Kaskaskia L. S.: Ste. Mary, Missouri. St. Louis L. S.: Ste. Genevieve, Missouri. Spirifer leidyi Norwood and Pratten—Continued.

1895. Spirifer Leidyi. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 30, figs. 25, 26. Chester L. S.: Chester, Illinois.

Spirifer leidyi var. chesterensis Swallow.

1866. Spirifer Leidyi var. Chesterensis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 409.
Ste. Genevieve L. S.

Spirifer leidyi var. merimacensis Swallow.

1866. Spirifer Leidyi var. Merimacensis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 410.

Archimedes L. S.: Barrett's Station, Missouri.

Spirifer lineatoides. See Reticularia lineatoides.

Spirifer lineatus. See Reticularia perplexa.

Spirifer lineatus var. perplexus. See Reticularia perplexa.

Spirifer lineatus var. striato-lineatus. See Reticularia perplexa.

Spirifer littoni Swallow.

1860. Spirifer Littoni. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 646. St. Louis L. S.: St. Louis County, Missouri.

#### Spirifer logani Hall.

1858. Spirifer logani. Hall, Geol. Iowa, vol. 1, pt. 2, p. 647, pl. 20, fig. 7; pl. 21, figs. 1a, b, 2.
 Keokuk L. S.: Near Nauvoo, Illinois.

1863. Spirifer lævigatus. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 86. Keokuk L. S.: Iowa and Missouri.

1869. Spirifera Logani? Winchell, Safford's Geol. Tenn., p. 442.
Immediately above Black Shale: Manchester, Cannon County, Tennessee.

1883. Spirifera Logani. Hall, Rep. N. Y. State Geol. for 1882, pl. (32) 57, figs. 7, 8.

1894. Spirifer Logani. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 26, fig. 10.

Keokuk L. S.: Near Nauvoo, Illinois.

1894. Spirifera logani. Keyes, Mo. Geol. Surv., vol. 5, p. 81.
Keokuk L. S.: Wayland and St. Francisville, Missouri; Keokuk, Iowa.

1895. Spirifer Logani. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 32, figs. 7, 8. Keokuk L. S.: Near Nauvoo, Illinois.

#### Spirifer marionensis Shumard.

1855. Spirifer Marionensis. Shumard, Geol. Rep. Mo., p. 205, pl. C, figs. 8a, b. Chemung Group: Chouteau Springs, Cooper County; Hannibal, Marion County; Louisiana, Pike County; and Moniteau County, Missouri.

1858. Spirifer marionensis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 511, pl. 6, figs. 1a-c. Hamilton Group: Louisiana and Hannibal, Missouri.

1870. Spirifera Marionensis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 252. Waverly Group: Sciotoville, Ohio.

1883. Spirifera Marionensis. Hall, Rep. N. Y. State Geol. for 1882, pl. (31) 56, fig. 15.

1888. Spirifer marionensis. Herrick, Bull. Den. Univ., vol. 3, p. 43, pl. 1, fig. 3; pl. 6, figs. 2-5; pl. 7, fig. 11; pl. 9, fig. 1.
Waverly Group: Licking County, Ohio.

1888. Spirifer marionensis. Herrick, Bull. Den. Univ., vol. 4, p. 26, pl. 2, figs. 2, 2a. Waverly Group: Portsmouth, Ohio.

1894. Spirifer Marionensis. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 27, fig. 3.

Chouteau L. S.: Pike County, Missouri.

#### Spirifer marionensis Shumard—Continued.

- 1894. Spirifera marionensis. Keyes, Mo. Geol. Surv., vol. 5, p. 78, pl. 40, figs. 1a, b. Kinderhook Group: Chouteau Springs, Hannibal, Louisiana, and Clarksville, Missouri.
- 1895. Spirifer marionensis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 15, figs. 2, 2a. Cuyahoga Shale: Portsmouth, Ohio.
- 1895. Spirifer Marionensis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 31, fig. 15. Chouteau L. S.: Pike County, Missouri.

### Spirifer meeki Swallow.

1860. Spirifer Meekii. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 645. Encrinital L. S.: Pettls, Saline, and other counties in Missouri.

Spirifer meusebachanus. See Spirifer cameratus.

# Spirifer mexicana Shumard.

- 1858. Spirifer Mexicanus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 293. White Permian L. S.: Guadalupe Mountains.
- 1859. Spirifer Mexicanus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 390, pl. 11, fig. 4.

White Permian L. S.: Guadalupe Mountains.

### Spirifer missouriensis Swallow.

1860. Spirifer Missouriensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 643. Chouteau L. S.: Cooper County, Missouri.

### Spirifer mortonanus Miller.

1870. Spirifer fastigatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 36. (Not. S. fastigatus Morton, 1836.)

Keokuk Group: Crawfordsville, Indiana.

1875. Spirifer fastigatus. Meek and Worthen, Geol. Surv. Ill., vol. 6., p. 521, pl. 30, fig. 3.

Keokuk Group: Crawfordsville, Indiana.

1883. Spirifera mortonana. Miller, Am. Pal. Foss., 2d ed., p. 298.

1895. Spirifer Mortonanus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 38, figs. 18, 19.
Keokuk Group: Crawfordsville, Indiana.

# Spirifer multigranosus Worthen.

1890. Spirifer multigranosa. Worthen, Geol. Surv. Ill., vol. 8, p. 105, pl. 11, figs. 5, 5b.

Coal Measures: Roll's Ford, Sangamon County, Illinois.

### Spirifer mundulus Rowley.

1893. Spirifera mundula. Rowley, Am. Geol., vol. 12, p. 307, pl. 14, figs. 10-12. Lower Burlington L. S.: Louisiana, Missouri.

# Spirifer mysticensis Meek.

1873. Spirifer Mysticensis. Meek, U. S. Geol. Surv. Mont., Idaho, Wyo., and Utah, p. 466.

Carboniferous: Outlet of Mystic Lake, Montana.

#### Spirifer neglectus Hall.

- 1858. Spirifer neglectus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 643, pl. 20, fig. 5. Keokuk L. S.: Keokuk, Iowa; Warsaw, Illinois.
- 1875. Spirifer neglectus. Meek and Worthen, Geol. Surv. Ill., vol. 6, p. 523, pl. 30, figs. 1c, 2a.

Keokuk L. S.: Warsaw, Hamilton, and Nauvoo, Illinois; Keokuk, Iowa.

1884. Spirifera neglecta. Walcott, Pal. Eureka Dist., p. 217, pl. 18, fig. 10. Lower Carboniferous: Eureka District. Nevada.

## Spirifer newberryi Hall.

1883. Spirifora Newberryi. Hall, Rep. N. Y. State Geol, for 1882, pl. (31) 56. figs. 9, 10.

Waverly Group: Ohio.

1894. Spirifer Newberryi. Hall, 13th Ann. Rep. N. Y. State Geol., p. 649. Waverly Group: Ohio.

1895. Spirifer Newberryi. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, p. 362, pl. 31, figs. 9, 10. Waverly Group: Ohio.

1897. Spirifer Newberryi. Hall, 14th Rep. N. Y. State Geol., p. 357, pl. 7, figs. 25, 26. Waverly Group: Ohio.

Spirifer norwoodanas. See Spiriferina norwoodana.

## Spirifer nova-mexicanus Miller.

1881. Spirifera novamexicana. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 4, p. 314, pl. 7, figs. 10-10b. Subcarboniferous: Lake Valley Mining District, New Mexico.

Spirifer octoplicatus. See Spiriferina kentuckensis.

Spirifer opimus. See Spirifer rockymontanus.

## Spirifer organensis Shumard.

1863. Spirifer Organensis. Shumard, Trans. St. Louis Acad. Sci., vol. 2, p. 108. Coal Measures: Oregon Mountains, near Fort Filmore, New Mexico.

# Spirifer osagensis Swallow.

1860. Spirifer Osageneis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 641. Chemung Rocks: Pettis County, Missouri.

# Spirifer ovalis Phillips.

1878. Spirifera oralis. Etheridge, Quart. Jour. Geol. Soc. Lond., vol. 34, p. 629. Carboniferous: Feilden Isthmus, latitude 82° 43'.

#### Spirifer peculiaris Shumard.

1855. Spirifer ? peculiarie. Shumard, Geol. Rep. Mo., p. 202, pl. C, figs. 7a, b. Chemung Group: Chouteau Springs, Cooper County, Missouri.

1874. Spirifer (Martinia) peculiaris. White, Prelim. Rep. Inv. Foss., p. 17. Subcarboniferous: Mountain Spring, Old Mormon Road, Nevada.

1877. Spirifer (Martinia) peculiaris. White, U. S. Geol. Surv. W. 100 Merid., vol. 4, p. 90, pl. 5, figs. 7a, b. Subcarboniferous: Mountain Spring, Old Mormon Road, Nevada.

1894. Spirifera peculiaris. Keyes, Mo. Geol. Surv., vol. 5, p. 79. Kinderhook L. S.: Chouteau Springs, Missouri.

Spirifer perplexus. See Reticularia perplexa.

Spirifer planoconvexus. See Ambocœlia planoconvexa.

# Spirifer plenus Hall.

1858. Spirifer plenus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 603, pl. 13, figs. 4a-d. Burlington L. S.: Burlington, Iowa; 9 miles below Iowa City, Iowa; Quincy, Illinois.

1890. Syringothyris? plena. Schuchert, 9th Ann. Rep. N. Y. State Geol., p. 37. Burlington L. S.: Burlington, Iowa; Quincy, Illinois; Pike County, Missouri.

1894. Syringothyris plena. Keyes, Mo. Geol. Surv., vol. 5, p. 88, pl. 40, fig. 8. Burlington L. S.: Hannibal, Missouri.

1895. Spirifer plenus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 37, figs. 32, 33. Burlington L. S.: Burlington, Iowa.

Spirifer propinguus. See Syringothyris textus.

Spirifer pseudolineatus. See Reticularia pseudolineata.

Spirifer pulchrus. See Spiriferina pulchra.

## Spirifer rockymontanus Marcou.

- 1858. Spirifer rocky-montana. Marcou, Geol. N. A., p. 50, pl. 7, figs. 4-4e. Mountain L. S.: Tigerus, New Mexico.
- 1858. Spirifer opimus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 711, pl. 28, figs. 1a, b. Coal Measures: Ohio, Maryland, Iowa, etc.
- 1860. Spirifer subrentricosa. McChesney, Desc. New Pal. Foss., p. 44.
  Coal Measures: Big Creek, Indiana, near New Harmony.
- 1861. Spirifer Rockymontani. Newberry, Ives's Colo. Expl. Exped., p. 127. Upper Carboniferous L. S.: New Mexico.
- 1865 Spirifer subventrices. McChesney, Ill. New Spec. Foss., pl. 1, figs. 4s, b.
- 1868. Spirifer opimus. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 35, pl. 1, figs. 4a, b.
  - Coal Measures: Big Creek, near New Harmony, Indiana.
- 1874. Spirifera opima. Derby, Bull. Cornell Univ. (Sci.), vol. 1, No. 2, p. 15, pl. 1, fig. 4; pl. 2, fig. 7; pl. 4, fig. 12.
  - Coal Measures: Bomjardim, Paredao, and Itaituba, Brazil.
- 1875. Spirifer (Trigonotreta) opimus 7. Meek, Pal. Ohio, vol. 2, p. 329, pl. 19, figs. 14a-e.
  Coal Measures: Ohio; Illinois; Iowa; Missouri; West Virginia, and Rocky Mountains.
- 1876. Spirifer Rockymontanus. White, Powell's Rep. Geol. Uinta Mts., p. 90.
  Lower Anbrey Group: Split Mountain Canyon and near Echo Park, Utah.
  Upper Aubrey Group: Beehive Point, near Horseshoe Canyon, Utah.
- 1877. Spirifer (Trigonotreta) opimus? Meek, U.S. Geol. Expl. 40 Par., vol. 4, p. 88, pl. 9, fig. 6.
  - Carboniferous L. S.: Six miles south of Promontory Station, Promontory Mountains, Railroad Canyon, Moleen Peak; Mount Nebe in Utah; Fossil Hill, White Pine District.
- 1877. Spirifer rockymontanus. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 134, pl. 11, figs. 9a-d.
  - Carboniferous: North Fork of Lewiston Canyon, Oquirrh range, and on west face of Oquirrh range, Utah; near Santa Fé, New Mexico.
- 1883. Spirifera opima. Hall, Rep. N. Y. State Geol. for 1882, pl. (31) 56, figs. 4-7. Coal Measures: Iowa; Brazil, South America.
- 1887. Spirifera opima. Herrick, Bull. Den. Univ., vol. 2, p. 44, pl. 2, fig. 23. Coal Measures: Flint Ridge, Ohio.
- 1888 Spirifera rockymontana. Keyes, Proc. Acad. Nat. Sci. Phil., p. 231. Lower Coal Measures: Des Moines, Iowa.
- 1894. Spirifer opimus. Hall and Clarke, Int. Study of Brach., pt. 2, pl. 27, figs. 12, 13.
  Coal Measures: Iowa.
- 1894. Spirifera rockymontana. Keyes, Mo. Geol. Surv., vol. 5, p. 84. Upper Coal Measures: Kansas City, Missouri.
- 1895. Spirifer opimus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 31, figs. 4-7.
  Coul Measures: Iowa; Bomjardim, Brazil.
- 1879. Spirifer rockymontanus. Smith, Proc. Am. Phil. Soc., vol. 35, p. 32.
  Lower Coal Measures: White County and Crawford County, Arkansas.
  See also Spirifer keokuk.

## Spirifer rostellatus Hall.

- 1858. Spirifer restellatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 641, pl. 20, figs. 2a-c. Keokuk L. S: Skunk River, Iowa.
- 1894. Spirifera rostellata. Keyes, Mo. Geol. Surv., vol. 5, p. 82. Keokuk L. S: Bonaparte, Iowa.
- 1895. Spirifer rostellatus. Hall and Clarks, Pal. N. Y., vol. 8, pt. 2, pl. 32, Ag. 5. Keokuk Group: Skunk River, Iowa.

#### Spirifer rostratus Morton.

1836. Spirifer restratus. Morton, Amer. Jour. Sci. (1), vol. 29, p. 152, pl. 14, fig. 34. Coal Measures: Ohio Valley.

#### Spirifer scobinus Meek.

1860. Spirifera scobina. Meek, Proc. Acad. Nat. Sci. Phil., p. 310.
Upper Carboniferous †: Divide between Long and Ruby valleys, latitude 40°, longitude 115° 20'.

1876. Spirifer (Spiriferina?) scobina. Meek, Simpson's Exp. Gt. Basin Utah, p. 351, pl. 2, figs. 5a-c.

Yellow L. S. (Upper Carboniferous?): Between Long and Ruby valleys.

1877. Spirifer (Trigonotreta) scobina. Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 90, pl. 9, figs. 1-1d.

Carboniferous L.S: Latitude 40° north, longitude 115° 20' west, Nevada.

Spirifer semiplicatus. See Reticularia cooperensis.

Spirifer setigerus. See Reticularia setigera.

## Spirifer sillanus Winchell.

1865. Spirifera Sillana. Winchell, Proc. Acad. Nat. Sci. Phil., p. 119.

Marshall Group: Valley Forge, one-half mile below Cuyahoga Falls, Ohio.

Spirifer spinosus. See Spiriferina spinosa.

### Spirifer striatiformis Meek.

1875. Spirifer (Trigonotreta) striatiformis. Meek, Pal. Ohio, vol. 2, p. 289, pl. 14, figs. 8a-e.

Waverly Group: Sciotoville, Ohio.

1888. Spirifer striatiformis. Herrick, Bull. Den. Univ., vol. 3, p. 44, pl. 1, fig. 6; pl. 3, figs. 23, 26; pl. 6, figs. 6, 7; pl. 12, fig. 20.
Waverly Group: Licking County, Ohio.

1888. Spirifer striatiformis. Herrick, Bull. Den. Univ., vol. 4, pl. 2, fig. 9. Waverly Group: Newark, Ohio.

1895. Spirifer striatiformis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 15, fig. 9. Upper Layers of Waverly Group: Newark, Ohio.

#### Spirifer striatus Martin.

1858. Spirifer striatus. Marcou, Geol. N. A., p. 49, pl. 7, figs. 2, 2a.
Mountain L. S.: Pecos Village, Tigeras, and summit of the Sierra de Sandia, New Mexico; Salt Lake City, Utah; Shasta County, California; Vancouver Island; Ohio; Kentucky; Tennessee; Indiana; Illinois; Iowa; Missouri; Arkansas.

1858. Spirifer striatus? var. Hall, Geol. Iowa, vol. 1, pt. 2, p. 647. Keokuk L. S.

1868. Spirifera striata. Dawson, Acad. Geol., p. 301. Carboniferous L. S.: Windsor, Nova Scotia.

1874. Spirifer striatus. White, Prelim. Rep. Inv. Foss., p. 17. Subcarboniferous: Mountain Spring, Old Mormon Road, Nevada.

1877. Spirifera striata. Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 269, pl. 5, figs. 13-15.

Lower Carboniferous L. S. Snowstorm Hill Dry Carvon Conjert Monn-

Lower Carboniferous L. S. Snowstorm Hill, Dry Canyon, Oquirrh Mountains, Utah.

1877. Spirifer striatus. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 134, and p. 88, pl. 5, fig. 10a.

Carboniferous: Fort Bayard, New Mexico; North Star District, Picacho range, Utah.

Subcarboniferous: Mountain Spring, Old Mormon Road, Nevada.

1887. Spirifer striata? Herrick, Bull. Den. Univ., vol. 2, pl. 2, fig. 24.
Coal Messures: Flint Ridge, Ohio.

## Spirifer striatus var. triplicatus Marcou.

1858. Spirifer striatus var. triplicatus. Marcou, Geol. N. A., p. 49, pl. 7, fig. 3. Mountain L. S.: Pecos Village, Tigeras, on the summit of the Sierra de Sandia, New Mexico; Great Salt Lake; Vancouver Island.

### Spirifer subæqualis Hall.

- 1858. Spirifer subequalis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 663, pl. 23, figs. 9a-c. Warsaw L. S.: Warsaw, Illinois.
- 1883. Spirifora subæqualis. Hall, Rep. N. Y. State Geol. for 1882, pl. (31) 56, figs. 13, 14.

Warsaw L. S.: Warsaw, Illinois.

1894. Spirifer subæqualis. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 27, fig. 2.

Warsaw L. S.: Warsaw, Illinois.

1895. Spirifer subæqualis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 31, figs. 13. 14.

Warsaw L. S.: Warsaw, Illinois.

## Spirifer subcardiiformis Hall.

1858. Spirifer subcardiiformis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 660, p.. 23, figs. 6a, b.

Warsaw L. S.: Above Alton, Illinois.

1880. Spirifer subcardiiformis. White, Cont. to Inv. Pal., No. 8, p. 165, pl. 41, figs. 2a-c.

Warsaw Group: Alton, Illinois; Spergen Hill, Indiana.

Spirifer subcuspidatus. See Syringothyris textus.

Spirifer subelliptica. See Spiriferina subelliptica.

### Spirifer suborbicularis Hall.

1858. Spirifer suborbicularis. Hall, Geol. Iowa, vol. 1, pt. 2, p. 644.

Keokuk L.S.: Keokuk, Iowa; Warsaw, Illinois.

1875. Spirifer suborbicularis. Meek and Worthen, Geol. Surv. Ill., vol. 6, p. 523, pl. 30, fig. 1.
Keokuk L. S.: Warsaw, Hamilton, Nauvoo, and Niota, Illinois; Keokuk,

eokuk L. S.: Warsaw, Hamilton, Nauvoo, and Niota, Illinois; Keokuk, Iowa.

#### Spirifer subrotundatus Hall.

1858. Spirifer subrotundatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 521, pl. 7, figs. 8a, b. Chemung Group: Burlington, Iowa.

1870. Spirifera subrotundata. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 252. Waverly Group: Sciotoville, Ohio.

1894. Spirifera subrotundata. Keyes, Mo. Geol. Surv., vol. 5, p. 78. Chouteau L. S.: Sedalia, Missouri.

Spirifer subventricosus. See Spirifer rockymontanus.

### Spirifer sulciferus Shumard.

1858. Spirifer sulcifera. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 293. White Permian L. S.: Guadalupe Mountains.

1859. Spirifer sulciferus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 391, pl. 11, fig. 3.

White Permian L. S.: Guadalupe Mountains.

#### Spirifer tanevensis Swallow.

1860. Spirifer Taneyensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 645. Chemung Rocks: Taney County, Missouri.

1894. Spirifera taneyeneis. Keyes, Mo. Geol. Surv., vol. 5, p. 78. Kinderhook Group: Taney County, Missouri.

Spirifer temerarius. See Reticularia temeraria.

#### Spirifer tenuicostus Hall.

1858. Spirifer tenuicostus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 662, pl. 23, figs. 8s-c.
Keokuk and Warsaw L. S.: Keokuk, Iowa; Warsaw and Dallas, Illinois.

### Spirifer tenuimarginatus Hall.

1858. Spirifer tenuimarginatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 641, pl. 20, figs. 1a-c.

Keokuk L. S.: Warsaw, Illinois.

1863. Spirifera tenuimarginata. Hall, Rep. N. Y. Stat. Geol. for 1882, pl. (32) 57, figs. 4-6.

Keokuk Group: Keokuk, Iowa.

1695. Spirifer tenuimarginatus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 32, figs. 4, 6.

Keokuk Group: Keokuk, Iowa.

## Spirifer tenuispinatus. See Reticularia tenuispinata.

## Spirifer texanus Meek.

1871. Spirifer (Trigonotretat) texanus. Meek, Proc. Acad. Nat. Sci. Phil., p. 179. Coal Measures: Young County, Texas.

1876. Spirifer (Trigonotreta?) Texanus. Newberry, U. S. Expl. Exped. from Santa Fe to Grand and Green rivers, p. 139, pl. 3, figs. 5-5b.
Coal Measures: Young County and Jack County, Texas; West Fork of

Trinity River, Texas.

1894. Spirifer Texas. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 26, fig. 9.

Coal Measures: Missouri.

1895. Spirifer Texanus. Hall and Clarks, Pal. N. Y., vol. 8, pt. 2, pl. 37, figs. 16, 17. Carboniferous L. S.: Graham County, Texas.

Spirifer textus. See Syringothyris textus.

Spirifer translatus. See Reticularia translata.

Spirifer transversus. See Spiriferina transversa.

#### Spirifer trigonalis Martin.

1884. Spirifer trigonalis. Walcott, Pal. Eureka Dist., p. 215, pl. 18, fig. 11. Lower Carboniferous: Eureka District, Nevada.

Spirifer triplicatus. See Spirifer cameratus.

### Spirifer vernonensis Swallow.

1860. Spirifera Vernonensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 644. Chemung rocks: St. Louis County, Missouri.

1865. Spirifer Vernonensis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 119. Sulphur Springs, Missouri.

Spirifer vernonensis var. ozarkensis Swallow.

1860. Spirifer Vernonensis var. Ozarkensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 644.

Chemung Rocks: Taney County, Missouri.

## Spirifer waverlyensis Winchell.

1870. Spirifera Waverlyensis. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 251. Waverly Group.

## Spirifer winchelli Herrick.

1888. Spirifer winchelli. Herrick, Bull. Den. Univ., vol. 3, p. 46, pl. 1, fig. 1, pl. 2, fig. 16; pl. 5, figs. 2, 3.
Waverly Group: Licking County, Ohio.

1895. Spirifer winchelli. Herrick, Geol. Surv. Ohio, vol. 7, pl. 21, figs. 2, 3.

Lower part of Burlington, above Conglomerate II: Ohio.

Spirifer (species undetermined).

1848. Spirifer. Christy, Letters on Geol., pl. 5, figs. 1–4.
Sandstone above black slate: Elk River, Tennessee.

1854. Spirifer (undet.). Shumard, Marcy's Expl. Red River of Louis., p. 177, pl. 1, fig. 3.

Carboniferous: Washington County, Arkansas.

1855. Spirifer (undet.). Schiel, Pac. R. R. Rep., vol. 2, p. 108, pl. 1, fig. 5. Carboniferous L. S.: Near Westport.

1858. Spirifer —— (n. s.). Hall, Geol. Iowa, vol. 1, pt. 2, p. 647. Keokuk L. S.

1859. Spirifer ——. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 28. Upper Coal Measures: Above Fort Riley, Kansas.

1877. Spirifer — sp. f Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 271, pl. 5, fig. 16.
Weber Quartzite: Bear River, Uinta Range, Utah.

1877. Spirifera (†) cf. S. disjuncts. Whiteaves, Geol. Surv. Canada, Rep. of Prog. 1875-76, p. 100.

Devonian or Carboniferous: Fossil Point, Peace River, Canada.

1877. Spirifera ——(†). Whiteaves, Geol. Surv. Canada, Rep. of Prog. 1875-76, p. 101.

Devonian or Carboniferous: Fossil Point, Peace River, Canada.

1878. Spirifera sp. allied to S. lamellosa McCoy. Etheridge, Quart. Jour. Geol. Soc. Lond., vol. 34, p. 629.

Carboniferous: Feilden Isthmus, latitude 82° 43'.

1887. Spirifera sp. f Herrick, Bull. Den. Univ., vol. 2, p. 46, pl. 2, fig. 6.
Coal Measures: Flint Ridge, Ohio.

1888. Spirifer sp. f Herrick, Bull. Den. Univ., vol. 3, pl. 1, fig. 2. Waverly Group: Licking County, Ohio.

1888. Spirifer sp. (cf. S. raricosta Con.). Herrick, Bull. Den. Univ., vol. 3, p. 46, pl. 1, fig. 5.

Waverly Group: Licking County, Ohio.

1888. Spirifer sp. Herrick, Bull. Den. Univ., vol. 3, pl. 7, fig. 24. Waverly Group: Licking County, Ohio.

1888. Spirifer sp. Herrick, Bull. Den. Univ., vol. 3, pl. 9, fig. 19. Waverly Group: Licking County, Ohio.

1888. Spirifer (resembling altus). Herrick, Bull. Den. Univ., vol. 4, pl. 2, figs. 3, 10. Waverly Group: Moot's Run, Licking County, Ohio.

1888. Spirifer sp. Herrick, Bull. Den. Univ., vol. 4, pl. 2, fig. 6. Waverly Group: Newark, Ohio.

1888. Spirifer sp. Herrick, Bull. Den. Univ., vol. 4, pl. 10, fig. 19. Waverly Group: Cuyahoga Falls, Ohio.

1895. Spirifer. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 46, fig. 22. Waverly Group: Richfield, Ohio.

1895. Spirifer sp. Herrick, Geol. Surv. Ohio, vol. 7, pl. 14, fig. 6.
Keokuk division of Waverly Group: Newark, Ohio.

1895. Spirifer (like S. altus). Herrick, Geol. Surv. Ohio, vol. 7, pl. 15, figs. 3-10. Waverly Group: Moot's Run, Licking County, Ohio.

### SPIRIFERINA D'Orbigny, 1847.

#### Spiriferina aciculifera Rowley.

1893. Spirifera aciculifera. Rowley, Am. Geol., vol. 12, p. 307, pl. 14, figs. 13, 14. (Spiriferina in Expl. of Plate.)

Louisiana (Lithographic) L. S.: Louisiana, Missouri.

Bull. 153-38

## Spiriferina billingsi Shumard.

- 1858. Spiriferina Billingsii. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 294.
  White Permian L. S.: Guadalupe Mountains, and at mouth of Delaware Creek, New Mexico.
- 1859. Spiriferina Billingsii. Shumard, Trans. St. Louis Acad. Sci.. vol. 1, p. 391. White and Dark Permian L. S: Guadalupe Mountains.

#### Spiriferina binacuta Winchell.

1865. Spiriferina binacuta. Winchell, Proc. Acad. Nat. Sci. Phil., p. 120. Base of Burlington, L. S.: Burlington, Iowa.

### Spiriferina clarksvillensis Winchell.

- 1865. Spiriforina Clarkesvillensis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 119. Lithographic L. S.: Clarksville, Missouri.
- 1894. Spiriferina clarksvillensis. Keyes, Mo. Geol. Surv., vol. 5, p. 85. Louisiana L. S.: Clarksville, Mo.

#### Spiriferina cristata.

1863. Spiriferina cristata. Davidson, Quart. Jour. Geol. Soc. Lond., vol. 19, p. 170, pl. 9, fig. 6.

Lower Carboniferous L. S.: Windsor, Brookfield, Shubenacadie, Debert River, and East River, Nova Scotia.

1868. Spiriferina cristata. Dawson, Acad. Geol., p. 291, fig. 90.
Carboniferous L. S.: Windsor, Brookfield, Shubenacadie, Debert River, and East River, Nova Scotia.

1884. Spiriferina cristata. Walcott, Pal. Eureka Dist., p. 218, pl. 18, figs. 12, 13. Lower Carboniferous: Eureka District, Nevada.

See also Spiriferina kentuckiensis.

### Spiriferina depressa Herrick.

1888. Spiriferina depressa. Herrick, Bull. Den. Univ., vol. 3, p. 47, pl. 10, fig. 3. Waverly Group: Licking County, Ohio.

#### Spiriferina kentuckiensis Shumard.

- 1852. Spirifor cotoplicata? Hall, Stansb. Exped. to Gt. Salt Lake, p. 409, pl. 4, figs. 4a, b.
  - Carboniferous: Missouri River, near Weston.
- 1855. Spirifer Kentuckensis. Shumard, Geol. Rep. Mo., p. 203.
  Coal Measures: On the Missouri River near Weston, and Grayson County, Kentucky.
- 1856. Spirifer kentuckensis. Hall, Pac. R. R. Rep., vol. 3, p. 102, pl. 2, figs. 10, 11. Carboniferous: Pecos Village, New Mexico.
- 1859. Spirifer Kentuckensis. Meek and Hayden, Proc. Acad. Nat. Sci. Phil., p. 27. Upper Coal Measures: Leavenworth, Kansas.
- 1866. Spirifer laminosus. Geinitz, Carb. und Dyas in Nebr., p. 45, tab. 3, figs. 19a-d. Plattsmouth and Nebraska City, Nebraska.
- 1872. Spiriferina Kentuckensis. Meek, U. S. Geol. Surv. Nebr., p. 185, pl. 6, figs. 3a-d; pl. 8, figs. 11a, b.
   Upper Coal Measures: Nebraska City, Nebraska.
   Coal Measures: Kentucky, Illinois, Missouri, Iowa, Nebraska, Kansas, .
  - Texas, New Mexico.
- 1876. Spiriferina Kentuckensis. White, Powell's Rep. Geol. Uinta Mts., p. 90. Lower and Upper Aubrey Group: Confluence of Grand and Green Rivers, Utah.
- 1877. Spiriferina Kentuckensis. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 138, pl. 10, figs. 4a-c.
  - Carboniferous: Santa Fé, New Mexico; Meadow Creek, south of Fillmore, Utah; Camp Apache, Arizona.

### Spiriferina kentuckiensis Shumard—Continued.

1883. Spirifera (Spiriferina) Kentuckiensis. Hall, Rep. N. Y. State Geol. for 1882, pl. (36) 61, figs. 14-16.
Coal Measures.

1884. Spiriferina Kentuckensis. White, 13th Rep. Geol. Surv. Ind., p. 135, pl. 35, figs. 13, 14.

Middle and Upper Coal Measures: Vermilion, Vigo, Knox, Gibson, Posey, Vanderburg, Dubois, and Spencer counties, Indiana.

1888. Spiriferina kentuckensis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 231. Lower Coal Measures: Des Moines, Iowa.

1894. Spiriferina kentuckensis. Keyes, Mo. Geol. Surv., vol. 5, p. 86.
Upper Coal Measures: Kansas City and Lexington, Missouri.

1895. Spiriferina Kentuckiensis. Hall and Clarke, Pal. N. Y. vol. 8, pt. 2, pl. 29, fig. 17; pl. 36, figs. 14-16.

Coal Measures: Vinton County, Ohio; Illinois.

1897. Spiriferina cristata. Smith, Proc. Am. Phil. Soc., vol. 35, p. 32.

Lower Coal Measures: Conway County, Arkansas.

Upper Coal Measures: Sebastian County, Arkansas, and Poteau Mountain, Indian Territory.

## Spiriferina kentuckiensis var. propatula Swallow.

1866. Spiriferina Kentuckensis var. propatulus. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 409.
Upper Coal Measures: Missouri.

## Spiriferina norwoodana Hall.

1856. Spirifer norwoodana. Hall, Trans. Albany Inst., vol. 4, p. 7.

St. Louis L. S.: Spergen Hill, Indiana; Alton, Illinois.

1882. Spiriferina Norwoodana. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 48, pl. 6, figs. 16, 17.

St. Louis Group: Spergen Hill, Indiana; Alton, Illinois.

1883. Speriferina norwoodana. Hall, 12th Rep. Geol. Surv. Ind., p. 327, pl. 29, figs. 16, 17.

St. Louis Group: Alton, Illinois; Spergen Hill, Indiana.

## Spiriferina octoplicata Sowerby.

1874. Spiriferina spinosa var. campestris. White, Prelim. Rep. Surv. Inv. Foss., p. 21.

Carboniferous (Coal Measures): Near Santa Fé, New Mexico; Camp Cottonwood, Lincoln County, Nevada.

1877. Spiriferina octoplicata. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 139, pl. 10, figs. 8a-c.

Carboniferous: Near Santa Fé, New Mexico; Camp Cottonwood, Lincoln, County, Nevada.

1878. Spiriferina cristata? var. octoplicata. Etheridge, Quart. Jour. Geol. Soc. Lond., vol. 34, p. 629.
Carboniferous: Cape Joseph Henry, latitude 82° 43'.

1888. Spiriferina octoplicata? Herrick, Bull. Den. Univ., vol. 3, pl. 7, fig. 16.

## Spiriferina pulchra Meek.

1860. Spirifera pulchra. Meek, Proc. Acad. Nat. Sci. Phil., p. 310.

Upper Carboniferous: East and west sides of Long Valley, and Pass east of Ruby Valley, latitude 40°, longitude 115° 20'.

1864. Spiriferina pulchra. Meek. Pal. Up. Mo., p. 19. Nevada Territory.

Waverly Group: Licking County, Ohio.

1876. Spirifer (Spiriferina) pulchra. Meek, Simpson's Exp. Gt. Basin, Utah, p. 352. pl. 2, figs. 1a-h.

## Spiriferina pulchra Meek—Continued.

1876. Yellow L. S. (Upper Carboniferous): Long Valley and Ruby Valley.

1877. Spiriferina pulchra. Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 85, pl. 8, figs. 1-1e, pl. 12, figs. 12-12d.

Carboniferous L. S.: Nevada, latitude 40° north, longitude 115° 20′ west; White Pine County, Nevada, 25 miles northeast of Hamilton, Ruby Group; mouth of Weber Canyon.

## Spiriferina solidirostris Winchell.

1865. Spiriferina solidirostris. Winchell, Proc. Acad. Nat. Sci. Phil., p. 120.
Base of Burlington L. S.: Burlington, Iowa; Hamburg, Illinois.

1870. Spiriferina solidirostris. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 252. Waverly Group: Newark, Sciotoville, and Rockville, Ohio.

1888. Spiriferine solidirostris. Herrick, Bull. Den. Univ., vol. 3, p. 47, pl. 1, fig. 8; pl. 2, figs. 9-11; pl. 5, fig. 13.

Waverly Group: Licking County, Ohio.

1895. Spiriferina solidirostris. Herrick, Geol. Surv. Ohio, vol. 7, pl. 21, fig. 13. Burlington: Ohio.

## Spiriferina spinosa Norwood and Pratten.

1855. Spirifer spinosus. Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. (2), vol. 3, p. 71, pl. 9, figs. 1a-d.

Top of Mountain L. S.: Chester, Illinois; Pope County, Illinois; and in Missouri opposite Hat Island.

1856. Spiriferina spinosa. Hall, Trans. Albany Inst., vol. 4, p. 8.
St. Louis L. S.: Bloomington, Indiana; Alton, Illinois.

1858. Spirifer spinosus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 706, pl. 27, figs. 5a-c. Kaskaskia L. S.: Kaskaskia and Chester, Illinois; Crittenden County, Kentucky.

1874. Spiriferina spinosa (f) Derby, Bull. Cornell Univ. (Sci.), vol. 1, No. 2, p. 23, pl. 6, figs. 8, 13, 14.

Coal Measures: Itaituba, Brazil.

1883. Spiriferina spinosa. Hall, Rep. N. Y. State Geol. for 1882, pl. (35) 60, figs. 26-29.

Chester L. S.: Chester, Illinois.

1891. Spiriferina spinosa. Herrick, Bull. Geol. Soc. Am., vol. 2, p. 46, pl. 1, fig. 19. Upper Waverly Group: Scioto County, Ohio.

1894. Spiriferina epinoea. Hall and Clarke, Int. to Study of Brace., pt. 2, pl. 31, figs. 4-7.

Chester L. S.: Chester, Illinois.

1894. Spiriferina spinosa. Keyes, Mo. Geol. Surv., vol. 5, p. 85. Kaskaskia L. S.: Ste. Mary, Missouri.

1895. Spiriferina spinosa. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 35, figs. 26-29.

Chester L. S.: Chester, Illinois.

# Spiriferina spinosa var campestris. See Spiriferina octoplicata.

#### Spiriferina subelliptica McChesney.

1860. Spirifer subelliptica. McChesney, Desc. New Pal. Foss., p. 43.
Kaskaskia L. S.: Button-mould Knob, Kentucky.

1894. Spiriferina subelliptica. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 2, fig. 2.

Keokuk Group: New Providence, Indiana.

1895. Spiriferina subelliptica. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 35, figs. 21, 22.

Keokuk Group: New Providence, Indiana.

Spiriferina subtexta White.

1862. Spiriferina? subtexta. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 25. Lower Burlington L. S.: Burlington, Iowa.

## Spiriferina transversa McChesney.

1860. Spirifer transversa. McChesney, Desc. New Pal. Foss., p. 42. Kaskaskia L. S.: Buzzard's Roost, Alabama.

1865. Spirifer transversa. McChesney, Ill. New Spec. Foss., pl. 6, figs. 3a-c.

1868. Spirifer transversa. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 34, pl. 6, figs. 3a-c.

Chester L. S.: Buzzard's Roost, Alabama.

1874. Spiriferina transversa. Derby, Bull. Cornell Univ. (Science), vol. 1, No. 2, p. 21, pl. 2, figs. 4, 6, 13; pl. 3, figs. 12, 14, 17; pl. 5, fig. 4.
 Coal Measures: Bomjardim and Itaituba, Brazil.

1883. Spirifera transversa. Hall, Rep. N. Y. State Geol. for 1882, pl. (35) 60, figs. 19-25.

Chester L. S.: Buzzard's Roost, Alabama.

Carboniferous: Brazil, South America.

1894. Spiriferina transversa. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 31, figs. 1-3.

Chester L. S.: Buzzard's Roost, Alabama.

Carboniferous L. S.: Itaituba, Brazil.

1895. Spiriferina transversa. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 35, figs. 19, 20, 23-25.

Chester L. S.: Buzzard's Roost, Alabama.

Carboniferous L. S.: Itaituba, Brazil.

#### Spiriferina (species undetermined.)

1864. Spiriferina (sp. undt.) Meek, Pal. Cal., vol. 1, p. 14. Carboniferous: Base's Ranch, Shasta County, California.

1877. Spiriferina (undt. sp.) Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 84, pl. 8, figs. 5-5b.

Carboniferous L. S.: Railroad Canyon, Diamond Mountains, Nevada.

1895. Spiriferina sp? Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 39, figs. 23, 24. Chester L. S.: Caldwell County, Kentucky.

1897. Spiriferina sp? Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 258. Batesville S. S.: Batesville, Arkansas.

### (SPIRIGERA D'Orbigny, 1847.)

Spirigera americana. See Cleiothyris roissyi.

Spirigera biloba. See Athyris biloba.

Spirigera caput-serpentis. See Seminula argentea.

Spirigera charitonensis. See Seminula argentea.

Spirigera clintonensis. See Cleiothyris clintonensis.

Spirigera corpulenta. See Athyris corpulenta.

Spirigera euzona. See Athyris euzona.

Spirigera formosa. See Athyris formosa.

Spirigera hannibalensis. See Athyris hannibalensis.

Spirigera hawni. See Seminula argentea.

Spirigera hirsuta. See Cleiothyris hirsuta.

Spirigera maconensis. See Athyris maconensis.

Spirigera missouriensis. See Cleiothyris missouriensis.

Spirigera monticola. See Athyris monticola.

Spirigera obmaxima. See Cleiothyris obmaxima.

Spirigera ohioensis. See Athyris ohioensis.

Spirigera pectinifera. See Cleiothyris roissyi.

Spirigera planosulcata. See Cleiothyris roissyi.

Spirigera plattensis. See Athyris plattensis.

Spirigera proutii. See Athyris prouti.

Spirigera reflexa. See Cleiothyris reflexa.

Spirigera singletonii. See Seminula argentea.

Spirigera subtilita. See Seminula argentea.

## SPIRODOMUS Beecher, 1886.

### Spirodomus insignis Beecher.

1886. Spirodomus insignis. Beecher, 39th Rep. N. Y. State Mus. Nat. Hist., p. 162, pl. 12, fig. 1-5.

Waverly Group: Warren County, Pennsylvania.

# SPIRORBIS Lamark, 1801.

### Spirorbis angulatus Dawson.

1868. Spirorbis angulatus. Dawson, Acad. Geol., p. 312. Carboniferous L. S.: Windsor, Nova Scotia.

(This name was preoccupied by Hall in 1862.)

#### Spirorbis annulatus Hall.

1856. Spirorbis annulatus. All, Trans. Albany Inst., vol. 4, p. 34.

St. Louis L. S.: Spergen Hill and Bloomington, Indiana; Alton, Illinois.

1882. Spirorbis annulatus. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 92, pl. 9, fig. 30.

St. Louis Group: Spergen Hill and Bloomington, Indiana; Alton, Illinois.

1883. Spirorbis annulatus. Hall, 12th Rep. Geol. Surv. Ind., p. 374, pl. 32, fig. 30. St. Louis Group: Alton, Illinois; Spergen Hill, Bloomington, and Lanesville, Indiana.

Spirorbis annulatus var. nodulosus. See Spirorbis nodulosus.

#### Spirorbis anthracosia Whitfield.

1881. Spirorbis anthracosia. Whitfield, Am. Jour. Sci. (3), vol. 21, p. 128. Coal Measures: Near Marietta, Ohio.

1891. Spirorbis anthracusia. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 608, pl. 16, figs. 18, 19.

Coal Measures: Marietta, Ohio.

1895. Spirorbis anthracosia. Whitfield, Gool. Surv. Ohio, vol. 7, p. 492, pl. 12, figs. 18, 19.

Coal Measures: Near Marietta, Ohio.

#### Spirorbis arietinus Dawson.

1871. Spirorbis arietina. Dawson, Geol. Surv. Canada, Rep. Prog. 1866-1869, p. 15, fig.

Carboniferous: Near New Glasgow, Nova Scotia.

## Spirorbis blairi Miller and Gurley.

1895. Spirorbis blairi. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 89, pl. 5, figs. 14, 15.

Chouteau L. S.: Sedalia, Missouri.

Spirorbis carbonarius Dawson.

\* 1845. Spirorbis carbonarius. Dawson, Quart. Jour. Geol. Soc. Lond., vol. 1, p. 326.
Coal Measures: Nova Scotia.

1889. Spirorbis carbonarius. Packard, Proc. Bost. Soc. Nat. Hist., vol. 24, p. 214.
Carboniferous: Pawtucket, Rhode Island.

### Spirorbis kinderhookensis Gurley.

√1883. Spirorbis Kinderhookensis. Gurley, New Carb. Foss. Bull., No. 1, p. 9. Kinderhook Group: Pike County, Missouri.

### Spirorbis nodulosus Hall.

1856. Spirorbis annulatus var. nodulosus. Hall. Trans. Albany Inst., vol. 4, p. 34.
St. Louis L. S.: Spergen Hill, Indiana.

1882. Spirorbis nodulosus. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 93, pl. 9, fig. 31.

St. Louis Group: Spergen Hill, Indiana.

1883. Spirorbis nodulosus. Hall, 12th Rep. Geol. Surv. Ind., p. 375, pl. 32, fig. 31. St. Louis Group: Spergen Hill and Lanesville, Indiana.

#### Spirorbis orbiculostoma Swallow.

1858. Spirorbis orbiculostoma. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 181. Permian: Kansas.

#### Spirorbis (undetermined species).

1891. Spirorbis. White, Bull. U. S. Geol. Surv., No. 77, p. 30, pl. 3, fig. 17. Permian: Military Crossing, Baylor County, Texas.

## SPRAGIOPORA Ulrich, 1890.

## Spragiopora parasitica Ulrich.

1890. Spragiopora parasitica. Ulrich, Geol. Surv. Ill., vol. 8, p. 638, pl. 65, figs. 6, 6a.

Chester Group: Chester, Illinois.

### STEAROCERAS Hyatt, 1893.

# Stearoceras gibbosum Hyatt.

1891. Endolobus gibbosus. Hyatt, 2d Ann. Rep. Geol. Surv. Tex., p. 353, figs. 55, 56.

Carboniferous: Colorado River, San Saba County, near Bend, Texas.

1893. Stearoceras gibbosum. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 424, figs. 7a, 8.

Carboniferous: Near Bend, San Saba County, Texas.

# STEGANOCRINUS Meek and Worthen, 1866.

# Steganocrinus albersi Miller and Gurley.

1897. Steganocrinus albersi. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 33, pl. 2, figs. 13-16.

Burlington Group: Burlington, Iowa.

#### Steganocrinus araneolus Meek and Worthen.

1860. Actinocrinus arancolus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 387.

Burlington L. S.: Burlington, Iowa.

1866. Steganocrinus araneolus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 198, pl. 15, figs. 1a, b. Burlington L. S.: Burlington, Iowa.

1894. Steganocrinus araneolus. Keyes, Mo. Geol. Surv., vol. 4, p. 194.

Lower Burlington L. S.: Kinderhook, Illinois; Burlington, lows.

### Steganocrinus araneolus Meek and Worthen-Continued.

1897. Steganocrinus araneolus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 581, pl. 61, figs. 2a, b.

Lower Burlington L. S.: Burlington, Iowa; Sedalia, Missouri; Lake Valley, New Mexico.

### Steganocrinus benedicti Miller.

1892. Steganocrinus benedicti. Miller, Adv. Sheets, 18th Rep. Geol. Surv. Ind., p. 27, pl. 4, figs. 10-12.

Keokuk Group: Canton, Washington County, Indiana.

1894. Steganocrinus benedicti. Miller, 18th Rep. Geol. Surv. Ind., p. 281, pl. 4, figs. 10-12.

Keokuk Group: Canton, Washington County, Indiana.

## Steganocrinus blairi Miller and Gurley.

1897. Steganocrinus blairi. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 35, pl. 2, figs. 21, 22.
Burlington Group: Near Sharon, Missouri.

### Steganocrinus concinnus Shumard.

1855. Actinocrinus concinnus. Shumard, Geol. Rep. Mo., p. 189, pl. A, fig. 5. Encrinital L. S.: North River, Marion County, Missouri.

1860. Actinocrinus validus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 384. Burlington L. S.: Cedar Creek, Warren County, Illinois.

1866. Actinocrinus concinnus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 200, pl. 15, figs. 9a, b.

Burlington L. S.: Cedar Creek, Warren County, Illinois.

1894. Steganocrinus concinnus. Keyes, Mo. Geol. Surv., vol. 4, p. 194.
Upper Burlington L. S.: Marion County, Missouri; Springfield, Missouri;
Kinderhook. Illinois.

1895. Shumardocrinus concinnus. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 41, pl. 2, figs. 7-10.

Burlington Group: Sedalia, Missouri.

1897. Steganocrinus concinnus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 582, pl. 61, figs. 5a, b.

Upper Burlington L. S.: Burlington and Pleasant Grove, Iowa; Marion County, Missouri.

### Steganocrinus globosus Wachsmuth and Springer.

1897. Steganocrinus globosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 585, pl. 61, fig. 6.

Kinderhook Group: Burlington, Iowa.

## Steganocrinus griffithi Miller and Gurley.

1897. Steganocrinus grifithi. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 34, pl. 2, figs. 17-20.

Burlington Group: Burlington, Iowa.

## Steganocrinus pentagonus Hall.

1858. Actinocrinus pentagonus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 577, pl. 10, figs. 6a, b.

Burlington L.S.: Burlington, Iowa.

1866. Steganocrinus pentagonus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 196, fig. 9.

1868. Steganocrinus pentagonus. Meek and Worthen. Geol. Surv. Ill., vol. 3, p. 474, pl. 16, fig. 8.

Burlington Group: Burlington, Iowa.

1894. Steganocrinus pentagonus. Keyes, Mo. Geol. Surv., vol. 4, p. 195, pl. 24, fig. 9.
Lower Burlington L. S.: Louisiana, Missouri.

### Steganocrinus pentagonus Hall-Continued.

1897. Steganocrinus pentagonus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 579, pl. 61, figs. 3a-e, 4a, b.

Lower Burlington L. S.: Burlington, Iowa; Sedalia, Missouri; Lake Valley, New Mexico.

## Steganocrinus sculptus Hall.

- 1858. Actinocrinus sculptus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 582, pl. 10, figs. 11a, b. Burlington L. S.: Burlington, Iowa.
- 1860. Actinocrinus sculptus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., pl. 3, fig. 3.
- 1873. Actinocrinus sculptus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 343, pl. 4, fig. 2.

Burlington L. S.: Burlington, Iowa.

- 1874. Actinocrinites sculptus. Meek, Am. Jour. Sci. (3), vol. 7, p. 190.
- 1894. Steganocrinus sculptus. Keyes, Mo. Geol. Surv., vol. 4, p. 194.
  Lower Burlington L. S.: White Ledge, Marion County, Missouri.
- 1897. Steganocrinus sculptus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 583, pl. 61, figs. 1a-f.

Lower Burlington L. S.: Burlington, Iowa; Lake Valley, New Mexico.

## Steganocrinus sharonensis Miller and Gurley.

1897. Steganocrinus sharonensis. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 32, pl. 2, figs. 10-12.

Burlington Group: Near Sharon, Missouri.

## Steganocrinus spergenensis Miller and Gurley.

1896. Steganocrinus spergenensis. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 29, pl. 2, figs. 4-7.

St. Louis Group: Spergen Hill, Indiana.

# STEMMATOCRINUS Trautschold, 1867.

# Stemmatocrinus trautscholdi Wachsmuth and Springer.

1886. Stemmatocrinus trautscholdi. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil., p. 180, pl. 9, figs. 7, 8. (Rev. Palaeocr., pt. 3, p. 256.)

Keokuk L. S.: Near Nashville (White's Creek), Tennessee.

# STENOPORA Lonsdale, 1844.

# Stenopora americana Ulrich.

1890. Stenopora americana. Ulrich, Geol. Surv. Ill., vol. 8, p. 437, pl. 74, figs. 1, 1a. Keokuk Group: Jersey County and Warsaw, Illinois.

1894. Stenopora americana. Keyes, Mo. Geol. Surv., vol. 5, p. 14. Keokuk L. S.: Warsaw, Illinois.

#### Stenopora americana var. varsoviensis Ulrich.

1890. Stenopora americana var. varsoviensis. Ulrich, Geol. Surv. Ill., vol. 8, p. 437, pl. 74, figs. 3, 3a.

Keokuk Group: Warsaw, Illinois.

## Stenopora angularis Ulrich.

1890. Stenopora angularis. Ulrich, Geol. Surv. Ill., vol. 8, p. 439, pl. 74, figs. 6-6b. Keokuk Group: Lagrange, Missouri.

1894. Stenoporia angularis. Keyes, Mo. Geol. Surv., vol. 5, p. 15. Keokuk L. S.: Lagrange, Missouri.

#### Stenopora carbonaria Worthen.

1875. Chaetetes? carbonaria. Worthen, Geol. Surv. Ill., vol. 6, p. 526, pl. 32, dq. 5.
Coal Messures: St. Clair County, Illinois.

### Stenopora carbonaria Worthen-Continued.

1887. Stenopora carbonaria. Foerste, Bull. Den. Univ., vol. 2, p. 85, pl. 7, figs. 13a-c.

Coal Measures: Bald Hill and Flint Ridge, Ohio.

1890. Stenopora carbonaria. Ulrich, Geol. Surv. Ill., vol. 8, p. 445, pl. 73, figs. 8, 8a.

Coal Measures: Caseyville, Illinois; Lawrence, Kansas; Ohio.

#### Stenopora carbonaria var. conferta Ulrich.

1890. Stenopora carbonaria var. conferta. Ulrich, Geol. Surv. Ill., vol. 8, p. 446, pl. 73, figs. 9, 9a.

Coal Measures: Caseyville, Illinois.

## Stenopora carbonaria var. maculosa Ulrich.

1890. Stonopora carbonaria var. maculosa. Ulrich, Geol. Surv. Ill., vol. 8, p. 445, pl. 73, figs. 10, 10a.

Coal Measures: Caseyville, Illinois.

### Stenopora cestriensis Ulrich.

1890. Stenopora cestriensis. Ulrich, Geol. Surv. Ill., vol. 8, p. 442, pl. 74, figs. 7, 7a. Chester Group: Chester, Illinois.

1894. Stenopora cestriensis. Keyes, Mo. Geol. Surv., vol. 5, p. 16. Kaskaskia L. S.: Chester, Illinois.

Stenopora columnaris. See Rhombopora lepidodendroides and Fistulipora nodulifera.

### Stenopora emaciata Ulrich.

1890. Stenopora emaciata. Ulrich, Geol. Surv. Ill., vol. 8, p. 438, pl. 74, figs. 2, 2a. Keokuk Group: Warsaw, Illinois; Keokuk, Iowa.

1894. Stenopora emanciata. Keyes, Mo. Geol. Surv., vol. 5, p. 15. Keokuk L. S.: Warsaw, Illinois.

#### Stenopora exilis Dawson.

1868. Stenopora exilis. Dawson, Acad. Geol., p. 287, fig. 85a.

Carboniferous L. S.: Shubenacadie, Windsor, and Stewiacke, Nova Scotia.

### Stenopora intercalaris Ulrich.

1890. Stenopora intercalaris. Ulrich, Geol. Surv. Ill., vol. 8, p. 439, pl. 74, figs. 5, 5a. Keokuk Group: Warsaw, Illinois.

1894. Stenopora intercalaris. Keyes, Mo. Geol. Surv., vol. 5, p. 15. Keokuk L. S.: Warsaw, Illinois.

# Stenopora intermittens Ulrich.

1890. Stenopora intermittens. Ulrich, Geol. Surv. Ill., vol. 8, p. 440, fig. 16. Keokuk Group: Warsaw, Illinois.

1894. Stenopora intermittens. Keyes, Mo. Geol. Surv., vol. 5. p. 15. Keokuk L. S.: Warsaw, Illinois.

#### Stenopora meekana Ulrich.

1890. Stenopora meekana. Ulrich, Geol. Surv. 111., vol. 8, p. 443, pl. 73, figs. 7, 7a. Chester Group: Chester, Illinois.

1894. Stenopora meekana. Keyes, Mo. Geol. Surv., vol. 5, p. 16. Kaskaskia L. S.: Chester, Illinois.

#### Stenopora montifera Ulrich.

1890. Stenopora montifera. Ulrich, Geol. Surv. Ill., vol. 8, p. 438, pl. 74, figs. 4-4b. Keokuk Group: Otter Creek, Jersey County, Illinois; Bentonsport, Iowa.

1894. Stenopora montifera. Keyes, Mo. Geol. Surv., vol. 5, p. 14. Keckuk L. S.: Clark County, Missouri; Bentonsport, Iowa.

# Stenopora ohioensis Foerste.

1887. Stenopora Ohioensis. Foerste, Bull. Den. Univ., vol. 2, p. 85, pl. 7, figs. 12a-e.
Coal Measures: Flint Ridge, Ohio.

#### Stenopora ramosa Ulrich.

1890. Stenopora ramosa. Ulrich, Geol. Surv. Ill., vol. 8, p. 442, pl. 73, figs. 6-6c. Chester Group: Sloan's Valley, Pulaski County, Kentucky; † Chester, Illinois.

### Stenopora rudis Ulrich.

1890. Stenopora rudis. Ulrich, Geol. Surv. Ill., vol. 8, p. 444, pl. 72, figs. 8-8b. Chester Group: Sloan's Valley, Pulaski County, Kentucky.

#### Stenopora? signata Ulrich.

1890. Stenopara? signata. Ulrich, Geol. Surv. Ill., vol. 8, p. 446, pl. 73, figs. 5-5b. Coal Measures: Casevville. Illinois.

#### Stenopora tuberculata Prout.

1859. Flustra tuberculata. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 447, pl. 17, figs 3-3f.

Second Archimedes L. S.: Barrett's Station, St. Louis County, Missouri. 1860. Cyclopora polymorpha. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 578.

1860. Cyclopora polymorpha. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 578. Chester L. S.: Pope County, Illinois.

1866. Cyclopora polymorpha. Prout, Geol. Surv. Ill., vol. 2, p. 421, pl. 21, figs. 5-5b.

Chester Group: Pope County, Illinois.

1890. Stenopora tuberculata. Ulrich, Geol. Surv. Ill., vol. 8, p. 441, fig. 17. Chester Group: Chester, Illinois. St. Louis L. S. and Warsaw Beds.

1894. Stenopora tuberculata. Keyes, Mo. Geol. Surv., vol. 5, p. 15. St. Louis L. S.: Barrett Station, Missouri. Kaskaskia L. S.: Chester, Illinois.

## Stenopora (species undetermined).

1888. Stenopora (sp. undet.). Ulrich, Bull. Den. Univ., vol. 4, p. 92. Cuyahoga Shale: Near Richfield, Ohio.

# STICTOPORA Hall, 1847.

#### Stictopora striata Hall.

1887. Stictopora etriata. Hall, Pal. N. Y., vol. 6, p. 246, pl. 63, fig. 22. Hamilton Group: Ontario County, New York.

1888. Stictopora striata. Herrick, Bull. Den. Univ., vol. 3, p. 95, pl. 12, fig. 40. Waverly Group: Licking County, Ohio.

#### STICTOPORELLA Ulrich, 1882.

#### Stictoporella basalis Ulrich.

1890. Stictoporella basalis. Ulrich, Geol. Surv. Ill., vol. 8, p. 532, pl. 75, figs. 5-5b. Warsaw beds: Warsaw, Illinois.

1894. Stictoporella basalis. Keyes, Mo. Geol. Surv., vol. 5, p. 22. Keokuk L. S.: Warsaw, Illinois.

## Stictoporella? undulata Ulrich.

1890. Stictoporella? undulata. Ulrich, Geol. Surv. Ill., vol. 8, p. 533, pl. 69, figs. 6-6b.

Chester Group: Litchfield, Kentucky.

### STRAPAROLLUS Montfort, 1810.

## Straparollus ammon White and Whitfield.

1862. Euomphalus ammon. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 301.

Chemung Group: Burlington, Iowa.

## Straparollus ammon White and Whitfield-Continued.

- 1865. Straparollus ammon. Winchell, Proc. Acad. Nat. Sci. Phil., p. 132. Millstone Grit: Western New York.
- 1889. Straparollus (Euomphalus) ammon. Keyes, Proc. Acad. Nat. Sci. Phil., p. 295.

Kinderhook Group: Burlington, Iowa.

1894. Straparollus ammon. Keyes, Mo. Geol. Surv., vol. 5, p. 158, pl. 51, fig. 6. Lower Burlington L. S.: Louisiana, Missouri.

#### Straparollus barrisi Winchell.

- 1863. Straparollus Barrisi. Winchell, Proc. Acad. Nat. Sci. Phil., p. 20. Yellow S. S.: Burlington, Iowa.
- 1889. Straparollus barrisi. Keyes, Proc. Acad. Nat. Sci. Phil., p. 295. Kinderhook Group: Burlington, Iowa.
- 1890. Straparollus barrisi. Keyes, Am. Geol., vol. 5, p. 195, pl., figs. 5a-c. Kinderhook Group: Southeastern Iowa.

# Straparollus blairi Miller.

- 1891. Straparollus blairi. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 86, pl. 15, fig. 3.
  Chouteau L. S.: Sedalia, Missouri.
- 1892. Straparollus blairi. Miller, 17th Rep. Geol. Surv. Ind., p. 696, pl. 15, fig. 3. Chouteau L. S.: Sedalia, Missouri.

# Straparollus boonensis Swallow.

1863. Euomphalus Boonensis. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 99. Encrinital L. S.: Missouri.

### Straparollus catilloides Conrad.

- \*1842. Inachus catilloides Conrad, Jour. Acad. Nat. Sci. Phil. (1), vol. 8, p. 273. Coal Measures.
- 1858. Euomphalus rugosus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 722, pl. 29, figa. 14a-c. Coal Measures: Illinois.
- 1866. Serpula (Spirorbis) Planorbites. Geinitz, Carb. und Dyas in Nebr., p. 3, tab. 1, fig. 6.
  Nebraska.
- 1872. Straparollus (Euomphalus) rugosus. Meek, U. S. Geol. Surv, Nebr., p. 230, pl. 6, figs. 5a, b, pl. 11, figs. 4a, b.
  Upper Coal Measures: Nebraska City, Rock Bluff, Aspinwall, and Cedar

Bluff, Nebraska. Coal Measures: Kansas; Missouri; Iowa; Illinois.

1873. Straparollus (Euomphalus) subrugosus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 607, pl. 29, fig. 11.

Coal Measures: Springfield, Illinois.

- 1874. Euomphalus rugosus. Meek, Am. Jour. Sci. (3), vol. 7, p. 583.
- 1884. Euomphalus (Straparollus) subrugosus. Walcott, Pal. Eureka Dist., p. 255, pl. 18, fig. 19.

Lower Carboniferous: Eureka District, Nevada.

- 1884. Euomphalus rugosus. White, 13th Rep. Geol. Surv. Ind., p. 161, pl. 32, figs. 11, 12.
  Cool Measures: Indiana.
- 1888. Euomphalus rugosus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 241.
  Lower Coal Measures: Des Moines, Iowa.
- 1891. Straparollus catilloides. Keyes, Proc. Acad. Nat. Sci. Phil., p. 255. Lower Coal Measures: Des Moines, Iowa.
- 1894. Straparollus catilloides. Keyes, Mo. Geol. Surv., vol. 5, p. 160. Upper Coal Measures: Kansas City, Missouri; Atchison, Kansas.

## Straparollus cornudanus Shumard.

1859. Straparollus Cornudanus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 400.

Coal Measures: Sierra Cornudanus, and 4 miles west of Sierra Hueco, El Paso County, Texas.

#### Straparollus exortivus Dawson.

1868. Euomphalus exortivus. Dawson, Acad. Geol., p. 308, fig. 118. Carboniferous L. S.: East River, Pictou, Nova Scotia.

### Straparollus latus Hall.

1858. Euomphalus latus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 605, pl. 12, figs. 7a, b. Burlington L. S.: Burlington, Iowa; Quincy, Illinois.

1888. Euomphalus latus? Herrick, Bull. Den. Univ., vol. 3, p. 87, pl. 12, fig. 26. Waverly Group: Licking County, Ohio.

1888. Euomphalus latus. Herrick, Bull. Den. Univ., vol. 4, pl. 7, fig. 5. Waverly Group: Ohio.

1889. Straparollus latus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 292. Burlington L. S.: Burlington, Iowa.

1890. Straparollus latus. Keyes, Am. Geol., vol. 5, p. 196, pl., figs. 1a, b. Lower Burlington L. S.: Southeastern Iowa.

1894. Straparollus latus. Keyes, Mo. Geol. Surv., vol. 5, p. 158, pl. 51, fig. 9. Burlington L. S.: Springfield, Ash Grove, Osceola, Louisiana, and Hannibal, Missouri.

1895. Euomphalus latus. Herrick, Geol. Surv. Ohio, vol. 7, pl. 18, fig. 5. Kinderhook freestone: Granville, Ohio.

#### Straparollus lens Hall.

1860. Euomphalus Ions. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 109. Goniatite L. S.: Rockford, Indiana.

1866. Straparollus lens. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 159, pl. 14, figs. 7a, b.
Chouteau L. S.: Moniteau County, Missouri; Illinois.

1894. Pleurotomaria lens. Keyes, Mo. Geol. Surv., vol. 5, p. 134.
Chouteau L. S.: Moniteau County, Missouri.

# Straparollus luxus White.

1877. Euomphalus luxus. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 94, pl. 5, figs. 13a, b. Subcarboniferous: Ophir City, Utah.

1877. Euomphalus luxus. Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 260, pl. 4, figs. 24, 25.

Near base of Wasatch L. S. (Waverly): Dry Canyon, Oquirrh Mountains, and Logan Canyon, Wahsatch range, Utah.

# Straparollus macromphalus Winchell.

1863. Straparollus macromphalus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 20. Yellow S. S.: Burlington, Iowa.

1865. Straparollus macromphalus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 132. Bed No. 1, and Oolite bed No. 6: Burlington, Iowa.

1889. Straparollus macromphalus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 295. Kinderhook Group: Burlington, Iowa.

1890. Straparollus macromphalus. Keyes, Am. Geol., vol. 5, p. 197, pl., figs. 4a-c. Kinderhook Group: Southeastern Iowa.

# Straparollus magnificus Shumard.

1863. Straparollus magnificus. Shumard, Trans. St. Louis Acad. Sci., vol. 2, p. 110. Carboniferous: Kentucky.

1891. Straparollus magnificus. Anon., Trans. St. Louis Acad. Sci., vol. 5, yl. 15, figs. 1-3.

Carboniferous: Kentucky.

## Straparollus missouriensis Miller and Gurley.

1896. Straparollus missouriensis. Miller and Gurley, Bull. No. 11, Ill. State Mus. Nat. Hist., p. 20, pl. 2, figs. 35, 36.

Chouteau L. S.: Sedalia, Missouri.

### Straparollus obtusus Hall.

1858. Euomphalus obtusus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 523.

Chemung Group: Burlington, Iowa.

1889. Straparollus obiusus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 296. Kinderhook Group: Burlington, Iowa.

1890. Straparollus obtusus. Keyes, Am. Geol., vol. 5, p. 197, pl., figs. 2a-c. Kinderhook Group (Oolite): Southeastern Iowa.

1894. Straparollus obtusus. Keyes, Mo. Geol. Surv., vol. 5, p. 157, pl. 51, fig. 5. Lower Burlington L. S.: Louisiana and Hannibal, Missouri.

## Straparollus ophirensis Hall and Whitfield.

1877. Euomphalus (Straparollus) Ophirensis. Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 261, pl. 4, figs. 26, 27.

Waverly Group: Dry Canyon, Oquirrh Mountains, Utah.

## Straparollus pernodosus Meek and Worthen.

1870. Straparollus (Euomphalus) pernodosus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 45.

Lower Coal Measures: Alton, Illinois.

1873. Straparollus (Euomphalus) pernodosus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 604, pl. 29, fig. 14.

Lower Coal Measures: Alton, Illinois.

1877. Euomphalus pernodosus. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 158, pl. 12, figs. 2a, b. Carboniferous: Mesa, Carrizo River, Arizona.

1888. Euomphalus pernodosus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 241. Lower Coal Measures: Des Moines, Iowa.

1891. Straparollus pernodosus. Keyes, Proc. Acad. Nat. Sci. Phil., p. 256. Lower Coal Measures: Des Moines, Iowa.

1894. Straparollus pernodosus. Keyes, Mo. Geol. Surv., vol. 5, p. 161. Upper Coal Measures: Kansas City, Missouri.

#### Straparollus planidorsatus Meek and Worthen.

1860. Euomphalus planodorsatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 462.

Chester L. S.: Thompson's quarry, Randolph County, Illinois.

1863. Euomphalus perspectivus. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 98. Kaskaskia L. S.

1866. Straparollus planidorsatus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 302, pl. 24, figs. 2a-c.

Chester Group: Thompson's quarry, Randolph County, Illinois.

1894. Straparollus planidorsatus. Keyes, Mo. Geol. Surv., vol. 5, p. 160. Kaskaskia L. S.: Ste. Mary, Missouri.

# Straparollus planispira Hall.

1856. Euomphalus planispira. Hall, Trans. Albany Inst., vol. 4, p. 20. St. Louis L. S.: Spergen Hill and Bloomington, Indiana.

1882. Euomphalus planispira. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 70, pl. 8, figs. 22, 23.

St. Louis Group: Spergen Hill, Paynter's Hill, and Bloomington, Indiana.

1883. Euomphalus planispira. Hall, 12th Rep. Geol. Surv. Ind., p. 351, pl. 31, figs. 22, 23.

St. Louis Group: Spergen Hill, Lanesville, and Bloomington, Indiana.

### Straparollus quadrivolvis Hall.

- 1856. Euomphalus quadrivolvis. Hall, Trans. Albany Inst., vol. 4, p. 19. St. Louis L. S.: Spergen Hill and Bloomington, Indiana.
- 1882. Euomphalus quadrivolvis. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 71, pl. 8, figs. 24, 25.
  - St. Louis Group: Spergen Hill, Paynter's Hill, and Bloomington, Indiana.
- 1883. Euomphalus. quadrivolvis. Hall, 12th Rep. Geol. Surv. Ind., p. 349, pl. 31, figs. 24, 25.
  - St. Louis Group: Spergen Hill, Lanesville, and Bloomington, Indiana

#### Straparollus roberti White.

- 1862. Euomphalus roberti. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 22. Upper Burlington L. S.: Burlington, Iowa.
- 1889. Straparollus roberti. Keyes, Proc. Acad. Nat. Sci. Phil., p. 291. Burlington L. S.: Burlington, Iowa.
- 1890. Straparollus roberti. Keyes, Am. Geol., vol. 5, p. 197, pl., figs. 3a, b. Upper Burlington L. S.: Southeastern Iowa.

## Straparollus similis Meek and Worthen.

- 1861. Straparollus similis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 145.
  St. Louis L. S.: Waterloo, Monroe County, Illinois.
- 1866. Straparollus similis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 285, pl. 19, figs. 4a, b.
  - St. Louis Group: Waterloo, Monroe County, Illinois.
- 1891. Straparollus similis. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 589, pl. 14, figs. 9-11.
  - Maxville L. S.: Newtonville and near Maxville, Ohio.
- 1895. Straparollus similis. Whitfield, Geol. Surv. Ohio, vol. 7, p. 476, pl. 10, figs. 9-11.
  - Maxville L. S.: Maxville and Newtonville, Ohio.
- 1897. Straparollus similis (†). Weller, Trans. N. Y. Acad. Sci., vol. 16, p. 270. Batesville S. S.: Batesville, Arkansas.

### Straparollus similis var. planus Meek and Worthen.

- 1861. Straparollus similis var. planus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 146.
  - St. Louis L. S.: Waterloo, Monroe County, Illinois.
- 1866. Straparollus similis var. planus. Meek and Worthen, Geol. Surv. Ill. vol. 2, p. 286, pl. 19, figs. 5a-c.
   St. Louis Group: Waterloo, Monroe County, Illinois.

### Straparollus spergenensis Hall.

- 1856. Euomphalus Spergenensis. Hall, Trans. Albany Inst., vol. 4, p. 19.
  St. Louis L. S.: Spergen Hill and Bloomington, Indiana.
- 1882. Euomphalus Spergenensis. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 69, pl. 8, figs. 16-19.
  - St. Louis Group: Spergen Hill, Paynter's Hill, Bloomington, and Elletts-ville, Indiana.
- 1883. Euomphalus Spergenensis. Hall, 12th Rep. Geol. Surv. Ind., p. 350, pl. 31, figs. 16-19.
  - St. Louis Group: Spergen Hill, Lanesville, and Bloomington, Indiana.
- 1894. Straparollus spergenensis. Keyes, Mo. Geol. Surv., vol. 5, p. 159. St. Louis L. S.: St. Louis, Missouri.

## Straparollus spergenensis var. planorbiformis Hall.

- 1856. Euomphalus Spergenensis var. planorbiformis. Hall, Trans. Albany Inst., vol. 4, p. 20.
  - St. Louis L. S.: Bloomington and Spergen Hill, Indiana.

# Straparollus spergenensis var. planorbiformis Hall—Continued.

- 1882. Euomphalus Spergenensis var. planorbiformis. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 70, pl. 8, figs. 20, 21.
  - St. Louis Group: Spergen Hill, Paynter's Hill, and Bloomington, Indiana.
- 1883. Euomphalus Spergenensis var. planorbiformis. Hall, 12th Rep. Geol. Surv. Ind., p. 351, pl. 31, figs. 20, 21.
  - St. Louis Group: Spergen Hill, Lanesville, and Bloomington, Indiana.

# Straparollus spirorbis Hall.

- 1860. Euomphalus spirorbis. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 109. Goniatite L. S.: Rockford, Indiana.
- 1888. Euomphalus (spirorbis?) Herrick, Bull. Den. Univ., vol. 3, p. 88, pl. 2, fig. 33. Waverly. Group: Licking County, Ohio.

## Straparollus springvalensis. See Omphalotrochus springvalensis.

# Straparollus subquadratus Meek and Worthen.

- 1870. Straparollus (Euomphalus) subquadratus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 46.
  - Upper Coal Measures: Montgomery County, Illinois.
- 1873. Straparollus (Euomphalus) subquadratus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 605, pl. 29, figs. 12, 13.
  - Upper Coal Measures: Montgomery County, Illinois.
- 1877. Euomphalus subquadratus. Herrick, Bull. Den. Univ., vol. 2, p. 147, pl. 14, fig. 9.
  - Coal Measures: Flint Ridge, Ohio.
- 1891. Euomphalus subquadratus. White, Bull. U. S. Geol. Surv., No. 77, p. 25, pl. 3, fig. 9.
  - Permian: Military Crossing, Baylor County, Texas.
- 1894. Straparollus subquadratus. Keyes, Mo. Geol. Surv., vol. 5, p. 162. Upper Coal Measures: Kansas City, Missouri.
  - Upper Coal Measures: Kansas City, Missouri.
- 1897. Euomphalus (Straparollus) subquadratus. Smith, Proc. Am. Phil. Soc., vol. 35, p. 40.
  - Lower Coal Measures: White County, Arkansas.

## Straparollus subumbilicatus Worthen.

- 1890. Straparollus sub-umbilicatus. Worthen, Gool. Surv. Ill., vol. 8, p. 142, pl. 24, figs. 3-3b.
  - Chester Group: Near Evansville, Randolph County, Illinois.

### Straparollus umbilicatus Meek and Worthen.

- 1860. Euomphalus umbilicatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 462.
  - Lower Coal Measures: St. Clair County, Illinois.
- 1866. Straparollus umbilicatus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 362, pl. 29, figs. 1a-c.
  - Lower Coal Measures: St. Clair County, Illinois.

## Straparollus utahensis Hall and Whitfield.

- 1877. Euomphalus (Straparollus) Utahensis. Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 259, pl. 4, figs. 20-23.
  - Near base of Wahsatch L. S. (Waverly): Dry Canyon, Oquirrh Mountains, Ogden and Logan Canyons, Wahsatch range, Utah.

# Straparollus varsoviensis Worthen.

- 1890. Straparollus rarsoviensis. Worthen, Geol. Surv. Ill., vol. 8, p. 142, pl. 25, figs. 2, 2a.
  - Keokuk L. S.: Warsaw, Illinois.

### Straparollus (species undetermined).

- 1859. Straparollus sp. (†) Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 399. Gray Permian L. S.: Guadalupe Mountains.
- 1868. Euomphalus (resembles E. quadratus McCoy). Dawson, Acad. Geol., p. 308. Carboniferous L. S.: Windsor and Gays River, Nova Scotia.
- 1876. Euomphalus f —... White, Powell's Rep. Geol. Uinta Mts., p. 91.

  Lower Aubrey Group: Confluence of Grand and Green rivers, Utah.
- 1887. Euomphalus sp. † Herrick, Bull. Den. Univ., vol. 2, p. 22, pl. 2, figs. 4, 5; pl. 5, fig. 5.

Coal Measures: Flint Ridge, Ohio.

- 1887. Straparollus? Hérrick, Bull. Den. Univ., vol. 2, pl. 14, fig. 3.
  Coal Measures: Flint Ridge, Ohio.
- 1888. Euomphalus sp. Herrick, Bull. Den. Univ., vol. 3, pl. 7, fig. 17.
  Waverly Group: Licking County, Ohio.
- 1891. Euomphalus f White, Bull. U. S. Geol. Surv., No. 77, p. 25.
  Permian: Military Crossing, Baylor County, Texas.
- 1897. Euomphalus (Straparollus) sp. Smith, Proc. Am. Phil. Soc., vol. 35, p. 40. Lower Coal Measures: Independence County, Arkansas,

## STREBLOPTERIA McCoy, 1851.

### Streblopteria gracilis Herrick.

- 1888. Streblopteria gracilis. Herrick, Bull. Den. Univ., vol. 3, p. 57, pl. 7, fig. .12
  Waverly Group: Licking County, Ohio.
- 1895. Streblopteria gracilis. Herrick, Geol. Surv. Ohio, vol. 7, pl. 24, fig. 15. Kinderhook or Burlington: Ohio.

#### Streblopteria media Herrick.

- 1888. Streblopteria media. Herrick, Bull. Den. Univ., vol. 3, p. 56, pl. 3, figs. 4, 8, 9;
   pl. 1, figs. 13, 19; pl. 7, figs. 2, 6.
   Waverly Group: Licking County, Ohio.
- 1895. Streblopteria media. Herrick, Geol. Surv. Ohio, vol. 7, pl. 24, figs. 16, 17. Cuyahoga Shale: Moot's Run, Ohio.

### Streblopteria similis Walcott.

1884. Streblopteria similis. Walcott, Pal. Eureka Dist., p. 230, pl. 8, figs. 4-4d; pl. 19, fig. 7.
Lower Carboniferous: Eureka District, Nevada.

## Streblopteria squama Herrick.

- 1888. Streblopteria equama. Herrick, Bull. Den. Univ., vol. 3, p. 57, pl. 7, fig. 14. Waverly Group: Licking County, Ohio.
- 1895. Streblopteria squama. Herrick, Geol. Surv. Ohio, vol. 7, pl. 24, fig. 14. Cuyahoga Shale: Granville, Ohio.

#### Streblopteria tenuilineatus Meek and Worthen.

- 1860. Pecten tenuilineatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 452. Upper Coal Measures: South line of Clinton County, Illinois.
- 1866. Streblopteria † tenuilineata. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 334, pl. 26, figs. 9a, b.

Upper Coal Measures: South line of Clinton County, Illinois.

### Streblopteria (species undetermined).

- 1888. Streblopteria. Herrick, Bull. Den. Univ., vol. 4, pl. 5, fig. 10. Waverly Group: Gann, Ohio.
- 1888. Streblopteria sp. Herrick, Bull. Den. Univ., vol. 4, pl. 5, fig. 15. Waverly Group: Newark, Ohio.

Bull. 153----39

## Streblopteria (species undetermined)—Continued.

1889 Streblopteria. Herrick, Am. Geol., vol. 3, pl. 3, fig. 10.

1889. Streblopteria sp. Herrick, Am. Geol., vol. 3, pl. 3, fig. 15.

1895. Streblopteria sp. Herrick, Geol. Surv. Ohio, vol. 7, pl. 24, fig. 5. Kinderhook: Gann. Ohio.

1895. Streblopteria sp. f Herrick, Geol. Surv. Ohio, vol. 7, pl. 24, fig. 6. Burlington Group: Newark, Ohio.

### STREBLOTRYPA Ulrich, 1890.

#### Streblotrypa amplexa Ulrich.

1888. Streblotrypa amplexa. Ulrich, Bull. Den. Univ., vol. 4, p. 86, pl. 14, fig. 13. Waverly Group: Near Sciotoville, Ohio.

### Streblotrypa denticulata Ulrich.

1888. Streblotrypa († Leioclema) denticulata. Ulrich, Bull. Den. Univ., vol. 4, p. 88, pl. 14, figs. 18, 19.

Cuyahoga Shale: Richfield and Lodi, Ohio.

## Streblotrypa distincta Ulrich.

1890. Streblotrypa distincta. Ulrich, Geol. Surv. Ill., vol. 8, p. 669, pl. 71, figs. 10-10b.

Chester Group: Chester, Illinois.

1894. Streblotrypa distincta. Keyes, Mo. Geol. Surv., vol. 5, p. 36. Kaskaskia L. S.: Chester, Illinois.

### Streblotrypa hertzeri Ulrich.

1888. Streblotrypa hertzeri. Ulrich, Bull. Den. Univ., vol. 4, p. 85, pl. 14, fig. 8. Cuyahoga Shale: Richfield and Lodi, Ohio.

Keokuk Group: Keokuk, Iowa.

#### Streblotrypa major Ulrich.

1888. Streblotrypa major. Ulrich, Bull. Den. Univ., vol. 4, p. 84, pl. 14, fig. 10. Cuyahoga Shale: Richfield, Ohio.

Keokuk Group: King's Mountain, Kentucky; Keokuk, Iowa.

1890. Streblotrypa major. Ulrich, Geol. Surv. Ill., vol. 8, p. 666, pl. 71, figs. 8-8d; pl. 72, figs. 1-1a.

Keokuk Group: King's Mountain, Kentucky; Keokuk, Iowa; Nauvoo, Illinois.

1894. Streblotrypa major. Keyes, Mo. Geol. Surv., vol. 5, p. 35. Keokuk L. S.: Keokuk, Iowa.

#### Streblotrypa multiporata Ulrich.

1888. Streblotrypa multiporata. Ulrich, Bull. Den. Univ., vol. 4, p. 87, pl. 14, fig. 11. Waverly Group: Moot's Run, Licking County, Ohio.

#### Streblotrypa nicklesi Ulrich.

1890. Streblotrypa nicklesi. Ulrich, Geol. Surv. Ill., vol. 8, p. 667, pl. 71, figs. 9-9c. Chester Group: Kaskaskia, Illinois; Sloan's Valley, Kentucky.

1894. Streblotrypa nicklesi. Keyes, Mo. Geol. Surv., vol. 5, p. 36. Kaskaskia L. S.: Ste. Genevieve, Missouri.

#### Streblotrypa obliqua Ulrich.

1888. Streblotrypa obliqua. Ulrich, Bull. Den. Univ., vol. 4, p. 85, pl. 14, fig. 9. Cuyahoga Shale: Lodi, Ohio.

## Streblotrypa radialis Ulrich.

1890. Streblotrypa radialis. Ulrich, Geol. Surv. Ill., vol. 8, p. 667, pl. 72, figs. 2-2d. Keokuk Group: Near Nauvoo, Illinois; Bentonsport, Iowa.

1894. Streblotrypa radialis. Keyes, Mo. Geol. Surv., vol. 5, p. 35. Keokuk L. S.: Bentonsport, Iowa.

### Streblotrypa regularis Ulrich.

1888. Streblotrypa regularis. Ulrich, Bull. Den. Univ., vol. 4, p. 88, pl. 14, fig. 14. Cuyahoga Shale: Cuyahoga County and Burbank, Ohio.

#### Streblotrypa striata Ulrich.

1888. Streblotrypa striata. Ulrich, Bull. Den. Univ., vol. 4, p. 87, pl. 14, figs. 12, 12a. Cuyahoga Shale: Richfield, Ohio.

## Streblotrypa subspinosa Ulrich.

1890. Streblotrypa subspinosa. Ulrich, Geol. Surv. Ill., vol. 8, p. 668, pl. 71, figs. 7.7a.

Chester Group: Chester, Illinois: Sloan's Valley, Kentucky.

STREPTAXIS Gray, 1837.

### Streptaxis whitfieldi Meek.

1871. Streptacis whitfieldi. Meek, Proc. Acad. Nat. Sci. Phil., p. 173. Coal Measures: Danville, Illinois.

1873. Streptacis Whitfieldi. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 596, pl. 29, fig. 1.

Coal Measures: Danville, Illinois.

1888. Streptacis whitfieldi. Keyes, Proc. Acad. Nat. Sci. Phil., p. 241. Lower Coal Measures: Des Moines, Iowa.

## (STREPTODISCUS Miller, 1892.)

Streptodiscus indianensis Miller. See Nautilus indianensis.

# STREPTORHYNCHUS King, 1850.

Streptorhynchus æquivalvis. See Orthothetes inæqualis.

Streptorhynchus biloba. See Derbya biloba.

Streptorhynchus crassum. See Derbya crassa.

Streptorhynchus crenistria. See Orthothetes crenistria and Derbya crassa.

Streptorhynchus equivalvis. See Orthothetes inæqualis.

Streptorhynchus inequalis. See Orthothetes inæqualis.

Streptorhynchus inflatus. See Orthothetes inflatus.

Streptorhynchus keokuk. See Derbya keokuk.

Streptorhynchus lens. See Orthothetes lens.

Streptorhynchus occidentalis. See Meekella occidentalis.

Streptorhynchus pyramidale. See Meekella pyramidale.

Streptorhynchus richmondi. See Derbya crassa.

Streptorhynchus robusta. See Derbya robusta.

Streptorhynchus shumardianus. See Meekella striato-costata.

Streptorhynchus striatocostata. See Meekella striato-costata.

## Streptorhynchus ulrichi Hall and Clarke.

1892. Streptorhynohus Ulrichi. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, p. 351, pl. 11B, fig. 15.

Chester L. S.: Crittenden County, Kentucky.

1897. Streptorhynchus Ulrichi. Hall, 14th Rep. N. Y. State Geol., p. 350, pl. 6, fig. 3. Chester L. S.: Crittenden County, Kentucky.

Streptorhynchus umbraculum. See Orthothetes umbraculum, Orthothetes crenistria, and Derbya crassa.

# Streptorhynchus williamsi Weller.

1897. Streptorhynchus williamsi. Weller, Trans. N. Y, Acad. Sci., vol. 16, p. 255, pl. 18, figs. 1-3.

Batesville S. S.: Batesville, Arkansas.

# STRIATOPORA Hall, 1852.

### Striatopora carbonaria White.

1862. Striatopora carbonaria. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 32. Upper and Lower Burlington L. S.: Burlington, Iowa.

1894. Striatopora carbonaria. Keyes, Mo. Geol. Surv., vol. 4, p. 121, pl. 14, fig. 7. Burlington L. S.: Ste. Genevieve and Hamilton, Missouri; Burlington, Iowa.

# STRICKLADINIA Billings, 1859.

# Stricklandinia (?) subquadrata Herrick.

1887. Stricklandinia (f) subquadrata. Herrick, Bull. Den. Univ., vol. 2, p. 49, pl. 1, figs. 14, 14a.

Coal Measures: Flint Ridge, Ohio.

### STROBOCERAS Hyatt, 1883.

### Stroboceras hartti Dawson.

1868. Gyroceras Harttii. Dawson, Acad. Geol., p. 311, fig. 125. Carboniferous L. S.: Windsor, Nova Scotia.

1883. Discites Hartti. Dawson, Rep. Peter Redpath Mus., No. 2, p. 10. Lower Carboniferous L. S.: Brookfield, Nova Scotia.

1883. Stroboceras Hartii. Hyatt, Proc. Bost. Soc. Nat. Hist., vol. 22, p. 291.

# Stroboceras trigonus Winchell.

1862. Nautilus (Trematodiscus) trigonus. Winchell, Am. Jour. Sci. (2), vol. 33, p. 359.

Marshall S. S.: Marshall, Michigan.

1893. Stroboceras (Naut.) trigonus. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 412.

# Stroboceras trisulcatus Meek and Worthen.

1860. Nautilus (Discus) trisulcatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 470.

Goniatite Beds: Rockford, Indiana.

1861. Nautilus trisulcatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 148.

1866. Nautilus (Trematodiscus) trisulcatus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 162, pl. 14, figs. 10a-c.

Goniatite Bed: Rockford, Indiana.

1870. Nautilus (Trematodiscus) trisulcatus. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 258.

Waverly Group: Rockville, Ohio.

1893. Stroboceras (Tremat.) trisulcatum. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 412.

# STROPHALOSIA King, 1844.

### Strophalosia beecheri Rowley.

1893. Strophalosia beacheri. Rowley, Am. Geol., vol. 12, p. 308, pl. 14, figs. 18, 19. Louisiana (Lithographic) L. S.: Louisiana, Missouri.

### Strophalosia cymbula Hall and Clarke.

1892. Strophalosia cymbula. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 17A, figs. 3, 4, 8, 9.

Keokuk Group: Lebanon, Kentucky, and south of Louisville, Kentucky.

1897. Strophalosia cymbula. Hall, 14th Rep. N. Y. State Geol., p. 355, pl. 7, fig. 5. Keokuk Group: Lebanon, Kentucky.

# Strophalosia guadalupensis Shumard.

1858. Aulosteges Guadalupensis. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 292.

White Permian L. S.: Guadalupe Mountains.

1859. Strophalosia (Aulosteges) Guadalupensis. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 390, pl. 11, figs. 5a, b.

Permian White L. S.: Guadalupe Mountains.

Strophalosia horrescens. See Productus nebraskensis.

### Strophalosia keokuk Beecher.

 1890. Strophalosia Keokuk. Beecher, Am. Jour. Sci. (3), vol. 40, p. 244, pl. 9, figs. 18-24.

Keokuk Shales: Crawfordsville, Indiana.

1892. Strophalosia Keokuk. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 17A, figs. 5-7.

Keekuk Group: Crawfordsville, Indiana.

### Strophalosia nummularis Winchell.

1863. Strophalosia? nummularis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 4. Yellow S. S.: Burlington, Iowa.

### Strophalosia scintilla Beecher.

1890. Strophalosia scintilla. Beecher, Am. Jour. Sci. (3), vol. 40, p. 243, pl. 9, figs. 10-13.

Chouteau L. S.: Pike County, Missouri.

1892. Strophalosia scintilla. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 15B, figs. 32-34.

Chouteau L. S.: Pike County, Missouri.

### Strophalosia spondyliformis White and St. John.

1868. Aulostoges spondyliformis. White and St. John, Trans. Chicago Acad. Sci., vol. 1, p. 118, fig. 2.

Upper Coal Measures: Appanoose and Pottawattamie counties, Iowa.

1890. Strophalosia spondyliformis. Beecher, Am. Jour. Sci. (3), vol. 40, p. 242.

1892. Strophalosia spondyliformis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 17A, figs. 25, 26.

Coal Measures: Missouri.

### Strophalosia (species undetermined).

1892. Strophalosia sp. † Hall and Clarke, Pal. N. Y., vol. 8, pt. 1, pl. 15B, fig. 35. Chouteau L. S.: Pike County, Missouri.

### (STROPHOMENA Rafinesque, 1825.)

Strophomena analoga. See Leptæna analoga.

### Strophomena nassuta Conrad.

1846. Strophomena nassuta. Conrad, Proc. Acad. Nat. Sci. Phil., p. 23. Carboniferous: Jersey Shore, Lycoming County, Pennsylvania.

Strophomena rhomboidalis. See Leptæna rhomboidalis.

### STROPHOSTYLUS Hall, 1859.

# Strophostylus bivolve White and Whitfield.

- 1862. Platyceras birolve. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 302.
  - Chemung Group: Burlington, Iowa.
- 1888. Platyceras birolve? Herrick, Bull. Den. Univ., vol. 3, p. 92. Waverly Group: Licking County, Ohio.
- 1889. Platystoma bivolve. Keyes, Proc. Acad. Nat. Sci. Phil., p. 293. Kinderhook Group: Burlington, Iowa.
- 1890. Platystoma birolve. Keyes, Proc. Acad. Nat. Sci. Phil., p. 179.
- 1894. Strophostylus bivolvis. Keyes, Mo. Geol. Surv., vol. 5, pl. 53, fig. 4.

# Strophostylus carleyana Hall.

- 1856. Natica Carlyana. Hall, Trans. Albany Inst., vol. 4, p. 31.
  - St. Louis L. S.: Spergen Hill and Bloomington, Indiana; Alton, Illinois.
- 1882. Naticopsis Carleyana. Whitfield, Bull. Am. Mus. Nat. Hist., vol. 1, p. 71, pl. 8, figs. 26, 27.
- St. Louis Group: Spergen Hill and Bloomington, Indiana; Alton, Illinois.
- 1883. Naticopsis Carleyana. Hall, 12th Rep. Geol. Surv. Ind., p. 369, pl. 31, figs. 26, 27.
  - St. Louis Group: Alton, Illinois; Spergen Hill and Bloomington, Indiana.
- 1894. Strophostylus? carleyana. Keyes, Mo. Geol. Surv., vol. 5, p. 196. St. Louis L. S.: Alton, Illinois.

### Strophostylus grayvillensis Worthen.

- 1860. Platyostomaf tumida. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 463. (Name preoccupied.)
  - Coal Measures: Grayville, Illinois.
- 1866. Pleurotomaria? tumida. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 361, pl. 31, figs. 1a, b.
  Upper Coal Measures: Grayville, Illinois.
- 1882. Platyostoma Grayvillensis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 38.

### Strophostylus inornatus Walcott.

1884. Platyostoma inornatum. Walcott, Pal. Eureka Dist., p. 255, pl. 24, figs. 3, 3a. Lower Carboniferous: Eureka District, Nevads.

### Strophostylus madisonensis Worthen.

- 1884. Naticopsis madisonensis. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 9. St. Louis L. S.: Madison County, Illinois.
- 1890. Naticopsis madisonensis. Worthen, Geol. Surv. Ill., vol. 8, p. 144, pl. 25, figs. 4-6.
  - St. Louis L. S.: Madison County, Illinois.

### Strophostylus nana Meek and Worthen.

- 1860. Platyostoma nana. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 463. Upper Coal Measures: Springfield, Illinois.
- 1861. Naticopsis nana. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 148.
- 1866. Naticopsis nana. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 365, pl. 31, figs. 4a, b.
  - Upper Coal Measures: Springfield, Illinois.
- 1877. Naticopsis nana. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 159, pl. 12, figs. 4a, b.
  - Carboniferous: Camp Cottonwood, near Spring Mountain, Lincoln County, Nevada.
- 1884. Naticopsis nana. White, 13th Rep. Geol. Surv. Ind., p. 162, pl. 36, figs. 6, 7.
  Middle and Upper Coal Measures: Indiana.

# Strophostylus nana Meek and Worthen-Continued.

- 1888. Naticopsis nana. Herrick, Bull. Den. Univ., vol. 4, pl. 11, fig. 8.
  Coal Measures: Fultonham, Ohio.
- 1891. Naticopsis nana. Keyes, Proc. Acad. Nat. Sci. Phil., p. 257. Lower Coal Measures: Des Moines, Iowa.
- 1894. Strophostylus nana. Keyes, Mo. Geol. Surv., vol. 5, p. 196.
  Upper Coal Measures: Clinton and Kansas City, Missouri.
- 1897. Naticopsis nana. Smith, Proc. Am. Phil. Soc., vol. 35, p. 40. Upper Coal Measures: Sebastian County, Arkansas.

# Strophostylus peoriensis McChesney.

- 1860. Platyostoma peoriensis. McChesney, Desc. New. Pal. Foss., p. 62. Upper Coal Measures: Peoria and Fulton counties, Illinois.
- 1865. Platyostoma peoriensis. McChesney, Ill. New Spec. Foss., pl. 2, figs. 11a, b.
- 1868. Platyostoma peoriense. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 49, pl. 2, figs. 11a, b.
- Upper Coal Measures L. S.: Peoria and Fulton counties, Illinois, 1894. Strophostulus peoriensis. Keyes, Mo. Geol. Surv., vol. 5, p. 197, pl. 52.
- 1894. Strophostylus peoriensis. Keyes, Mo. Geol. Surv., vol. 5, p. 197, pl. 52, fig. 6. Upper Coal Measures: Kansas City, Missouri.

# Strophostvlus remex White.

- 1876. Naticopsis remex. White, Powell's Rep. Geol. Uinta Mts., p. 109. Lower Aubrey Group: Confluence of Grand and Green rivers, Utah.
- 1880. Naticopsis remex. White, Cont. to Inv. Pal., No. 6, p. 139, pl. 34, fig. 6a.
  Middle Carboniferous: Confluence of Grand and Green rivers, Utah.
- 1891. Naticopsis remex. White, Bull. U. S. Geol. Surv., No. 77, p. 24, pl. 3, fig. 10. Permian: Military Crossing and Goodwin Creek, Baylor County, Texas.
- 1894. Strophostylus remex. Keyes, Mo. Geol. Surv., vol. 5, p. 197, pl. 55, figs. 7a, b. Upper Coal Measures: Kansas City, Missouri.

### Strophostylus reversum Hall.

- 1860. Platyceras reversum. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 91.
  Burlington L. S.
- 1868: Platyceras [\*] reversum. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 508, pl. 15, figs. 4a, b.

Burlington L. S.: Boonville, Missouri.

1894. Strophostylus reversum. Keyes, Mo. Geol. Surv., vol. 5, p. 195. Keokuk L. S.: Boonville, Missouri.

### Strophostylus subovatus Worthen.

1873. Naticopsis subovatus. Worthen, Geol. Surv. Ill., vol. 5, p. 595, pl. 28, fig. 9. Upper Coal Measures: Lasalle, Illinois.

# STROTOCRINUS Meek and Worthen, 1866.

Strotocrinus asper. See Physetocrinus asper.

Strotocrinus asperrimus. See Actinocrinus asperrimus.

### Strotocrinus blairi Miller and Gurley.

1895. Strotocrinus blairi. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 48, pl. 2, fig. 24.

Burlington Group: Sedalia, Missouri.

Strotocrinus bloomfieldensis. See Strotocrinus regalis.

Strotocrinus dilatatus. See Physetocrinus dilatatus.

Strotocrinus ectypus. See Cactocrinus ectypus.

# Strotocrinus glyptus Hall.

1860. Actinorinus glyptus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. 12., p. 2.
Burlington L. S.: Burlington, Iowa.

# Strotocrinus glyptus Hall-Continued.

1897. Strotocrinus glyptus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 640, pl. 60, figs. 1a-c; pl. 65, figs. 2a, b.

Upper Burlington L. S.: Burlington, Iowa; Missouri.

Strotocrinus liratus. See Teleiocrinus liratus.

# Strotocrinus ornatus Miller and Gurley.

1896. Strotocrimus ornatus. Miller and Gurley, Bull. No. 8, Ili. State Mus. Nat. Hist., p. 30, pl. 2, figs. 12-14.

Burlington Group: Near Burlington, Iowa.

### Strotocrinus perumbrosus. See Strotocrinus regalis.

# Strotocrinus regalis Hall.

1860. Actinocrinus regalis. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 8. Burlington L. S.: Burlington, Iowa.

1860. Actinocrinus perumbrosus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 7. Burlington L. S.: Burlington, Iowa.

1860. Actinocrinus speciosus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 386.

Burlington L. S.: Three miles west of Burlington, Iowa.

1866. Strotorinus perumbrosus? Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 188, fig. 5.

1866. Strotocrinus regalis. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 191, fig. 6, p. 192, fig. 7, pl. 16, figs. 6a, b. Burlington L. S.: Burlington, Iowa.

1873. Strotocrinus perumbrosus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 357, pl. 8, fig. 4.

Burlington L. S.: Burlington, Iowa.

1880. Strotocrinus bloomfieldensis. Miller, Jour. Cin. Soc. Nat. Hist., vol. 2, p. 258, pl. 15, figs. 6, 6a.
Keokuk Group: New Bloomfield, Missouri.

1894. Strotocrinus regalis. Keyes, Mo. Geol. Surv., vol. 4, p. 193, pl. 24, fig. 9. Upper Burlington L. S.: Ash Grove, New Bloomfield, and Hannibal, Missouri.

1897. Strotocrinus regalis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 638, pl. 65, figs. 1a-d.

Upper Burlington L. S.: Burlington, Iowa; Quincy, Illinois; Hannibal, Missouri.

### Strotocrinus umbrosus. See Teleiocrinus umbrosus.

### Strotocrinus venustus Miller and Gurley.

1894. Strotocrinus venustus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 26, pl. 6, fig. 1.

Burlington Group: Burlington, Iowa.

### STROTOPORA Ulrich, 1890.

# Strotopora dermata Ulrich.

1890. Strotopora dermata. Ulrich, Geol. Surv. Ill., vol. 8, p. 488, pl. 77, figs. 8, 8a. Keokuk Group: Keokuk, Iowa; Warsaw, Illinois.

1894. Strotopora dermata. Keyes, Mo. Geol. Surv., vol. 5, p. 17. Keokuk L. S.: Keokuk, Iowa.

# Strotopora faveolata Ulrich.

1890. Strotopora faveolata. Ulrich, Geol. Surv. Ill., vol. 8, p 487, pl. 77, figs. 9, 9a. Keokuk Group: Bentonsport, Iowa; Warsaw, Illinois.

### Strotopora faveolata Ulrich—Continued.

1894. Strotopora faveolata. Keyes, Mo. Geol. Surv., vol. 5, p. 17.

Keokuk L. S.: St. Francisville, Missouri; Warsaw, Illinois; Bentonsport, Iowa.

# STYLASTREA Lonsdale, 1845.

### Stylastrea inconferta Lonsdale.

1855. Stylastrea Inconferta. Salter, Belcher's "Last of the Arctic Voyages," p. 381, pl. 36, fig. 4.

Carboniferous: Depot Point.

# (STYLIFER Broderip, 1829.)

Stylifer primogenia. See Sphærodoma primogenia.

# SYNBATHOCRINUS Phillips, 1836.

# Synbathocrinus angularis Miller and Gurley.

1894. Synbathoorinus angularis. Miller and Gurley, Bull. No. 5, Ill. State Mus. Nat. Hist., p. 42, pl. 4, figs. 3, 4.

Keokuk Group: Buttonmould Knob, Kentucky.

# Synbathocrinus blairi Miller.

1891. Synbathocrinus Blairi. Miller, Bull. Geol. Surv. Mo., No. 4, p. 32, pl. 4, figs. 13-15.

Keokuk Group: Boonville, Missouri.

### Synbathocrinus brevis Meek and Worthen.

1869. Symbathoorinus brevis. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 68. Lower Burlington L. S.: Burlington, Iowa.

1873. Synbathocrinus brevis. Meek and Worthen, Geol. Surv. Ill., vol. 5. p. 439, pl. 2, fig. 6.

Burlington L. S.: Burlington, Iowa.

### Synbathocrinus dentatus Owen and Shumard.

1852. Symbathocrinus dentatus. Owen and Shumard, Jour. Acad. Nat. Sci. Phil. (2), vol. 2, p. 93, pl. 11, figs. 7a, b.

Subcarboniferous L. S.: Burlington, Iowa.

1852. Synbathocrinus dentatus. Owen and Shumard, Geol. Rep. Wis., Iowa, and Minn., p. 597, tab. 5B, figs. 7a, b.

Subcarboniferous L. S.: Burlington, Iowa.

1894. Synbathocrinus dentatus. Keyes, Mo. Geol. Surv., vol. 4, p. 206, pl. 25, fig. 14. Burlington L. S.: Columbia, Springfield, and Ste. Genevieve, Missouri.

# Synbathocrinus granuliferus Wetherby.

1880. Synbathoorinus granuliferus Wetherby, Jour. Cinn. Soc. Nat. Hist., vol. 2, p. 250, pl. 16, figs. 3, 3a.

Kinderhook Group: King's Mountain Tunnel, Kentucky.

### Synbathocrinus illinoisensis Miller and Gurley.

1896. Synbathocrinus illinoisensis. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 53, pl. 3, figs. 29-31.
Burlington Group: Adams County, Illinois.

### Synbathocrinus oweni Hall.

1860. Synbathocrinus oweni. Hall, 13th Rep. N. Y. State Cab. Nat. Hist., p. 111. Goniatite L. S.: Rockford, Indiana.

### Synbathocrinus papillatus Hall.

\*1861. Symbathocrinus papillatus. Hall, Desc. New Spec. Crin., p. 18. Burlington L. S.

# Synbathocrinus robustus Shumard.

- 1865. Synbathocrinus robustus. Shumard, Trans. St. Louis Acad. Sci., vol. 2, p. 397.
  Blue Marl (Keokuk): Buttonmould Knob, 7 miles south of Louisville, Kentucky.
- 1875. Symbathocrinus robustus. Meek and Worthen, Geol. Surv. Ill., vol. 6, p. 514, pl. 29, fig. 4.

Keokuk Group: Green County, Illinois; Buttonmould Knob, Kentucky.

# Synbathocrinus swallovi Hall.

- 1858. Synbathocrinus swallovi. Hall, Geol. Iowa, vol. 1, pt. 2, p. 672, pl. 17, figs. 8, 9. St. Louis L. S.: Near St. Louis, Missouri.
- 1894. Synbathocrinus swallovi. Keyes, Mo. Geol. Surv., vol. 4, p. 207.

  Keokuk L. S.: St. Louis County and Boonville, Missouri; Keokuk, Iowa.

### Synbathocrinus wachsmuthi Meek and Worthen.

- 1869. Synbathocrinus Wachsmuthi. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 67.
  - Upper Burlington L. S. > Burlington, Iowa.
- 1873. Synbathocrinus Wachsmuthi. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 437, pl. 2, fig. 5.

Burlington L. S.: Burlington, Iowa.

See also Catillocrinus wachsmuthi.

### Synbathocrinus wortheni Hall.

- 1858. Synpathocrinus worthen: Hall, Geol. Iowa, vol. 1, pt. 2, p. 560, pl. 9, fig. 9. Burlington L. S.: Jersey Landing, Illinois.
- 1894. Symbathocrinus wortheni. Keyes, Mo. Geol. Surv., vol. 4, p. 206, pl. 25, fig. 15. Burlington L. S.: Springfield and Hannibal, Missouri.

# (SYNOCLADIA King, 1849.)

Synocladia biserialis Swallow. See Septopora biserialis.

Synocladia cestriensis Meek and Worthen. See Septopora subquadrans.

Synocladia rectistyla Whitfield. See Septopora rectistyla.

Synocladia virgulacea Swallow. See Septopora biserialis.

# (SYNTRIELASMA Meek and Worthen, 1865.)

Syntrielasma hemiplicata. See Enteletes hemiplicata.

### SYRINGOPORA Goldfuss, 1826.

# Syringopora harveyi White.

- 1862. Syringopora Harreyi. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 32. Chemung Group and Lower Burlington, L. S.: Burlington, Iowa.
- 1874. Syringopora Harveyi? White, Prelim. Rep. Inv. Foss., p. 17. Subcarboniferous: Ewells Spring, Arizona.
- 1877. Syringopora Harveyi? White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p 80. Subcarboniferous: Ewells Spring, Arizona.
- 1894. Syringopora harveyi? Keyes, Mo. Geol. Surv., vol. 4, p. 121, pl. 14, fig. 6a. Keokuk L. S.: Boonville, Canton, and Curryville, Missouri.

### Syringopora multattenuata McChesney.

- 1860. Syringopora multattenuata. McChesney, Desc. New Pal. Foss., p. 75.
  Coal Measures: Eight miles south of Springfield, Illinois.
- 1865. Syringopora multattenuata. McChesney, Ill., New Spec. Foss., pl. 2, figs. 4, 4a.
- 1867. Syringopora multattenuata. McChesney, Trans. Chicago Acad. Sci., vol. 1, p 2, pl. 2, figs. 4, 4a.

Coal Measures: Eight miles south of Springfield, Illinois.

- 1872. Syringopora multattenuata. Meek, U. S. Geol. Surv. Nebr., p. 144, pl. 1, figs. 5a-d.
  - Upper Coal Measures: Four miles up Platte River, north side; 8 miles south of Springfield, Illinois.
- 1876. Syringopora multattenuata. White, Powell's Geol. Rep. Uinta Mts., p. 88. Red Wall Group: Gypsum Canyon, Colorado River, Utah.
- 1877. Syringopora multattenuata? White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 100.

Carboniferous: Nevada and Utah.

- 1894. Syringopora multattenuata. Keyes, Mo. Geol. Surv., vol. 4, p. 122, pl. 14, fig. 6b.
- Upper Coal Measures: Kansas City, Missouri.

# Syringopora (species undetermined).

- 1855. Syringopora (Aulopora). Salter, Belcher's "Last of the Arctic Voyages," p. 385, pl. 36, fig. 7. Carboniferous: Depot Point.
- 1876. Syringopora ——? White, Powell's Geol. Rep. Uinta Mts., p. 88.

Lower Aubrey Group: Confluence of Grand and Green rivers, Utah.

- 1877. Syringopora (undet. sp.). Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 50, pl. 6, figs. 2, 2a.
  - Carboniferous L. S.: Southwest of Bald Mountain, Uinta Range; Morgan Peak, Wasatch range, Utah.
- 1877. Syringopora (†) species. Whiteaves, Geol. Surv. Canada, Rep. of Prog. 1875-76, p. 98.

Devonian or Carboniferous: Fossil Point, Peace River, Canada.

- 1878. Syringopora sp. Etheridge, Quart. Jour. Geol. Soc. Lond., vol. 34, p. 609. Carboniferous: Feilden Isthmus, latitude 82° 43'.
- 1891. Syringopora —— † White, Bul. U. S. Geol. Surv., No. 77, p. 29.
  Permian: Camp Creek, Archer County, Texas; Goodwin Creek, Baylor County, Texas.
- 1894. Syringopora sp. ? Keyes, Mo. Geol. Surv., vol. 4, p. 122, pl. 14, fig. 5. Kinderhook L. S.: Kinderhook, Illinois.

# SYRINGOTHYRIS Winchell, 1863.

### Syringothyris angulatus Simpson.

1889. Syringothyris angulata. Simpson, Trans. Am. Phil. Soc., vol. 15, p. 440, figs. 1-3.

Waverly Group: Near Warren, Pennsylvania.

1890. Syringothyris angulata. Schuchert, 9th Rep. N. Y. State Geol., p. 32. Waverly Group: Near Warren, Pennsylvania.

# Syringothyris carteri Hall.

- 1857. Spirifer carteri. Hall, 10th Rep. N. Y. State Cab. Nat. Hist., p. 170. Waverly S. S.: Licking County, Ohio.
- 1860. Spirifer (Cyrtia?) Hannibalensis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 647.
  - Lithographic L. S.: Marion County, Missouri.

### Syringothyris carteri Hall—Continued.

- 1863. Syringothyris typa. Winchell, Proc. Acad. Nat. Sci. Phil., p. 7. Base of Burlington L. S.: Burlington, Iowa.
- 1870. Spirifera Carteri. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 252.
  Waverly Group: Sciotoville and Rockville, Ohio; near Shafer's, Pennsylvania.
- 1870. Syringothyris typa. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 252.
  Waverly Group: Newark and Sciotoville, Ohio; near Shafer's, Pennsylvania.
- 1877. Spirifer cuspidatus? Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 87, pl. 3, figs. 11, 11a.
  - Carboniferous or Devonian L. S.: White Pine Mountains, Treasure Hill, Nevada.
- 1884. Syringothyris cuspidata. Walcott, Pal. Eureka Dist., p. 219.

  Lower Carboniferous: Eureka District, Nevada; near Clendenin, Montana.
- 1888. Syringothyris cuspidatus. Herrick, Bull. Den. Univ., vol. 3, p. 41, pl. 1, fig. 7; pl. 2, fig. 17.
  - Waverly Group: Licking County, Ohio.
    Suringothuris Carteri. Schuchert, 9th Ann. Rep. N. Y. State

1890. Syringothyris Carteri. Schuchert, 9th Ann. Rep. N. Y. State Geol., p. 30. Bedford Shale: Bedford, Ohio.

Waverly S. S.: Licking County, Ohio.

Chouteau L. S.: Marion and Pike Counties, Missouri.

Kinderhook Group: Burlington, Iowa.

Burlington Group: Burlington, Iowa.

Lower Carboniferous: White Pine Mountains, Richmond Mountain, Eureka District, Nevada; near Clendenin, Montana.

- 1894. Syringothyris typa. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 30, figs. 1, 2.
  - Burlington L. S.: Burlington, Iowa.
- 1894. Syringothyris carteri. Keyes, Mo. Geol. Surv., vol. 5, p. 87, pl. 40, fig. 10. Kinderhook Group: Clarksville, Louisiana, and Hannibal, Missouri. Burlington L. S.: Springfield, Missouri.
- 1895. Syringothyris Hannibalensis. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 25, figs. 33-35.
  Chouteau L. S.: Pike County, Missouri.
- 1895. Syringothyris typa. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 26, figs. 6, 7, 10; pl. 27, figs. 1-3.
  Burlington L. S.: Burlington, Iowa.
- Syringothyris cuspidatus. See Syringothyris carteri and Syringothyris herricki.

### Syringothyris extenuatus Hall.

- 1858. Spirifer extenuatus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 520, pl. 7, fig. 6. Chemung Group: Burlington, Iowa.
- 1863. Syringothyris Halli. Winchell, Proc. Acad. Nat. Sci. Phil., p. 8. Yellow S. S.: Burlington, Iowa.
- 1865. Spirifera extenuata. Winchell, Proc. Acad. Nat. Sci. Phil., p. 119. Marshall Group: Battle Creek and Hillsdale, Michigan.
- 1865. Syringothyris Halli. Winchell, Proc. Acad. Nat. Sci. Phil., p. 119. Marshall Group: Battle Creek, Michigan.
- 1870. Spirifera extenuata. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 251. Waverly Group: Newark, Ohio.
- 1874. Spirifer (Syringothyris) extenuatus. White, Prelim. Rep. Inv. Foss., p. 17. Subcarboniferous: Mountain Spring, Old Mormon Road, Nevada.
- 1877. Spirifer extenuatus. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 88, pl. 5, tigs. 9a-d.

### Syringothyris extenuatus Hall—Continued.

- 1877. Subcarboniferous: Mountain Spring, Old Mormon Road, Nevada.
- 1890. Syringothyris extenuatus. Schuchert, 9th Ann. Rep. N. Y. State Geol., p. 33. Kinderhook Group: Burlington, Iowa; Battle Creek, Michigan; Clarks-ville, Missouri; Mountain Spring, Old Mormon Road, Nevada. Waverly S. S.: Licking County, Ohio.
- 1894. Syringothyris extenuata. Keyes, Mo. Geol. Surv., vol. 5, p. 86. Kinderhook L. S.: Clarksville, Missouri.

### Syringothyris gigas Troost.

- \*1841. Cyrtia gigas. Troost, 6th Geol. Rep. Tenn., p. 12.
- 1890. Syringothyris gigas. Schuchert, 9th Ann. Rep. N. Y. State Geol., p. 33. Encrinital stratum, near the Harpeth River, Davidson County, Tennessee.
- Syringothyris halli. See Syringothyris extenuatus.

# Syringothyris hannibalensis. See Syringothyris carteri.

# Syringothyris herricki Schuchert.

- 1888. Syringothyris cuspidatus. Herrick, Bull. Den. Univ., vol. 3, pl. 5, figs. 4-7. Waverly Group: Licking County, Ohio.
- 1890. Syringothyris herricki. Schuchert, 9th Ann. Rep. N. Y. State Geol., p. 36. Waverly Group: Ohio.
- 1895. Syringothyris herricki. Herrick, Geol. Surv. Ohio, vol. 7, pl. 21, figs. 4-7. Kinderhook freestone: Granville, Ohio.

# Syringothyris missouri Hall.

- 1894. Syringothyris Missouri. Hall, 13th Ann. Rep. N. Y. State Geol., p. 650. Chouteau L. S.: Chouteau Springs, Missouri.
- 1895. Syringothyris Missouri. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, p. 363, pl. 39, figs. 29-31.
  - Chouteau L. S.: Chouteau Springs and Pike County, Missouri.
- 1897. Syringothyris Missouri. Hall, 14th Rep. N. Y. State Geol., p. 358, pl. 8, figs. 14-16.
  - Chouteau L. S.: Chouteau Springs, Missouri.

### Syringothyris plena. See Spirifer plenus.

### Syringothyris randalli Simpson.

- 1889. Syringothyris randalli. Simpson, Trans. Am. Phil. Soc., vol. 15, p. 441, figs. 1, 2.
  - Chemung Group: Near Warren, Pennsylvania, and at Union City, Pennsylvania.
- 1890. Syringothyris randalli. Schuchert, 9th Ann. Rep. N. Y. State Geol., p. 36. Waverly Group: Warren and Erie counties, Pennsylvania.
- 1894. Springothyris Randalli. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 30, figs. 10, 11.
  - Waverly Group: Warren, Pennsylvania.
- 1895. Syringothyris Randalli. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 27, figs. 13-17.
  - Waverly Group: Warren, Pennsylvania.

### Syringothyris subcuspidatus. See Syringothyris textus.

### Syringothyris textus Hall.

- 1857. Spirifer textus. Hall, 10th Rep. N. Y. State Cab. Nat. Hist., p. 169. Chemung S. S.: "The Knobs," near New Albany, Indiana.
- 1858. Spirifer subcuspidatus. Hall. Geol. Iowa, vol. 1, pt. 2, p. 646, pl. 20, figs. 5a, b. Keokuk L. S.: Keokuk, Iowa; Nauvoo and Warsaw, Illinois.
- 1858. Spirifer propinguus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 647. Keokuk L. S.: Keokuk, Iowa; Nauvoo and Warsaw, Illinois.

### Syringothyris textus Hall—Continued.

1868. Spirifer propinquus. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 530, pl. 19, figs. 8a-c.

Keokuk Group: Near Warsaw, Illinois.

1875. Spirifer Carteri. Meek, Pal. Ohio, vol. 2, p. 285, pl. 14, figs. 7a-d. Waverly Group: Sciotoville and Licking County, Ohio.

1881. Spirifor textus. White, 2d Ann. Rep. Dep. Stat. and Geol. Ind., p. 512, pl. 7, figs. 1, 2.

Knobstone Group: Near Providence and New Albany, Indiana.

1890. Syringothyris texta. Schuchert, 9th Ann. Rep. N. Y. State Geol., p. 34.

Waverly Group: Sciotoville, Ohio.

Knobstone Group: Near New Albany and New Providence, Indiana.

Keokuk Group: Crawfordsville, Indiana; Keokuk, Iowa; Warsaw and

Nauvoo, Illinois.

1894. Syringothyris subcuspidata. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 30, fig. 3.

Keokuk Group: Nauvoo, Illinois.

1894. Syringothyris texta. Hall and Clarke, Int. to Study of Brach., pt. 2, pl. 30, figs. 4-9.

Keokuk Group: New Providence, Indiana.

1894. Syringothyris lexta. Keyes, Mo. Geol. Surv., vol. 5, p. 88. Keokuk L. S.: Keokuk, Iowa.

1895. Syringothyris subcuspidatus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 26, figs. 8, 11; pl. 27, fig. 18.

Keokuk L. S.: Keokuk, Iowa; Nauvoo, Illinois.

1895. Syringothyris taxta. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 26, figs. 9-12; pl. 27, figs. 4-12.

Keokuk Group: New Providence, Indiana.

# Syringothyris typa. See Syringothyris carteri.

# Syringothyris (species undetermined).

1888. Syringothyris sp. Herrick, Bull. Den. Univ., vol. 4, pl. 3, fig. 7. Waverly Group: Ohio.

1895. Syringothyris. Herrick, Geol. Surv. Ohio, vol. 7, pl. 23, fig. 8. (Waverly Group): Ohio.

### TÆNIODICTYA Ulrich, 1890.

### Tæniodictya cingulata Ulrich.

1890. Taniodictya cingulata. Ulrich, Geol. Surv. Ill., vol. 8, p. 530, pl. 67, figs. 3-3b. Keokuk Group: Warsaw, Illinois.

# Tæniodictya frondosa Ulrich.

1890. Taniodictya frondosa. Ulrich, Geol. Surv. Ul., vol. 8, p. 529, pl. 67, fig. 5; pl. 69, figs. 5-5c.

Keokuk Group: Keokuk, Iowa.

1894. Taniodictya frondosa. Keyes, Mo. Geol. Surv., vol. 5, p. 22. Keokuk L. S.: Keokuk, Iowa.

### Tæniodictya interpolata Ulrich.

1888. Taniodiotya interpolata. Ulrich, Bull. Den. Univ., vol. 4, p. 80, pl. 13, figs. 9, 9a.

Cuyahoga Shale: Richfield, Ohio.

### Tæniodictya ramulosa Ulrich.

1890. Twinodictya ramulosa. Ulrich, Geol. Surv. Ill., vol. 8, p. 528, pl. 67, figs. 1-1b. Keokuk Group: Keokuk, Iowa; Nauvoo and Warsaw, Illinois.

1894. Taniodictya ramulosa. Keyes, Mo. Geol. Surv., vol. 5, p. 22.

Keokuk L. S.: Keokuk, Iowa.

### Tæniodictya ramulosa var. burlingtonensis Ulrich.

1890. Taniodictya ramulosa var. burlingtonensis. Ulrich, Geol. Surv. Ill., vol. 8, p. 529, pl. 67, figs. 2-2b.

Burlington L. S.: Burlington, Iowa.

# Tæniodictya subrecta Ulrich.

1890. Tamiodictya subrecta. Ulrich, Geol. Surv. Ill., vol. 8, p. 530, pl. 67, figs. 4-4d. St. Louis Group: Elizabethtown, Kentucky.

# TAINOCERAS Hyatt, 1883.

### Tainoceras cavatum Hvatt.

- 1891. Tainoceras caratum. Hyatt, 2d Ann. Rep. Geol. Surv. Tex., p. 341, figs. 42-44. Carboniferous: Texas.
- 1893. Tainoceras cavatum. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 398. Carboniferous: Ballinger, Texas.

### Tainoceras duttoni Hyatt.

1893. Tainoceras duttoni. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 401, figs. 3, 4.
Carboniferous: Upper Valley of Zuni Plateau, 12 to 15 miles southwest of
Grant's, a station on New Mexico, Arizona and Pacific Railroad.

#### Tainoceras occidentalis Swallow.

- 1858. Nautilus occidentalis. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 196. Permian: Valley of Cottonwood, Kansas.
- 1860. Nautilus quadrangulus. McChesney, Desc. New Pal. Foss., p. 65.
  Coal Measures, Grayville, Illinois.
- 1860. Nautilus nodocarinatus. McChesney, Desc. New Pal. Foss., p. 66. Coal Measures: Grayville, Illinois.
- 1860. Nautilus biserialis. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 92. Coal Measures: Iowa and Illinois.
- 1865. Nautilus quadrangulus. McChesney, Ill. New Spec. Foss., pl. 3, figs. 5a-b.
- 1865. Nautilus nodocarinatus. McChesney, Ill. New Spec. Foss., pl. 3, fig. a.
- 1868. Nautilus occidentalis. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 51, pl. 3, figs. 5-7.

Coal Measures: Grayville, Illinois.

- 1872. Nautilus occidentalis. Meek, U. S. Geol. Surv. Nebr., p. 234, pl. 11, fig. 17.
  Upper Coal Measures: Nebraska City and Rock Bluff, Nebraska; Valley of Cottonwood Creek, Kansas; Grayville and Lasalle, Illinois.
  Coal Measures: Near Pittsburg, Pennsylvania.
  - Lower Coal Measures: West Virginia.
- 1888. Nautilus occidentalis. Keyes, Proc. Acad. Nat. Sci. Phil., p. 242. Lower Coal Measures: Des Moines, Iowa.
- 1891. Nautilus occidentalis. White, Bull. U. S. Geol. Surv., No. 77, p. 23, pl. 2, figs. 11, 12.
- Permian: Military Crossing of the Big Wichita, Baylor County, Texas. 1893. Tainoceras quadrangulum. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 402,
  - figs. 5-7.
    Carboniferous: Military Crossing, Baylor County, Texas.
- 1894. Nautilus occidentalis. Keyes, Mo. Geol. Surv., vol. 5, p. 224. Upper Coal Measures: Kansas City, Missouri.

# TALAROCRINUS Wachsmuth and Springer, 1881.

### Talarocrinus cornigerus Shumard.

- \*1857. Dichocrinus cornigerus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 72, pl. 1, figs. 1a, b.
- 1873. Dichocrinus cornigerus? Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 537, pl. 20, fig. 6.
  - St. Louis Group: Near Roseclare, Hardin County, Illinois.

# Talarocrinus cornigerus Shumard—Continued.

1897. Talarocrinus cornigerus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 783, pl. 78, figs. 6a, b, 7a, b.

St. Louis Group: Franklin County, Alabama; Tateville, Kentucky.

# Talarocrinus decornis Wachsmuth and Springer.

1897. Talarocrinus decornis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 788, pl. 78, figs. 3a-c.

St. Louis Group: Tateville, Pulaski County, Kentucky.

# Talarocrinus ovatus Worthen.

- 1882. Talarocrinus ovatus. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist, p. 36. Chester L. S.: Monroe County, Illinois.
- 1883. Talarocrinus ovatus. Worthen, Geol. Surv. Ill., vol. 7, p. 314, pl. 29, fig. 11. Chester L. S.: Monroe County. Illinois.
- 1897. Talarocrinus ovatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 787, pl. 78, figs. 2a, b.
  - (†) Kaskaskia Group: Monroe County, Illinois.

# Talarocrinus patei Miller and Gurley.

1897. Talarocrinus patei. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 44, pl. 3, figs. 9-12.

Kaskaskia Group: Breckinridge County, Kentucky.

### Talarocrinus sexlobatus Shumard.

- \*1857. Dichocrinus sexlobatus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 73, pl. 1, figs. 3a-c.
- 1897. Talarocrinus sexlobatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 784, pl. 78, figs. 1a-c.
  - St. Louis Group: Russellville, Kentucky; Logan County, Kentucky; Flagpond, Virginia.

### Talarocrinus simplex Shumard.

- \*1857. Dichocrinus simplex. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 74, pl. 1, figs. 2a, b.
  - 1858. Dichocrinus simplex. Hall, Geol. Iowa, vol. 1, pt. 2, p. 654, pl. 22, figs. 12a, b. Warsaw L. S.: Spergen Hill, Indiana.
  - 1860. Dichocrinus simplex. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., pl. 1, figs. 4a-c.
  - 1894. Talarocrinus simplex. Keyes, Mo. Geol. Surv., vol. 4, p. 205, pl. 25, fig. 6. St. Louis L. S.: Ste. Mary, Missouri.
  - 1897. Talarocrinus simplex. Wachsmuth and Springer, N. Am. Crin. Cam., p. 790, pl. 78, figs. 8a, b.

Warsaw L. S.: Spergen Hill, Indiana; St. Genevieve County, Missouri; Kentucky; Tennessee.

### Talarocrinus subglobosus Wachsmuth and Springer.

1897. Talarocrinus subglobosus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 789, pl. 79, figs. 1a, b

St. Louis Group: Tateville, Pulaski County, Kentucky.

### Talarocrinus symmetricus Lyon and Casseday.

- 1862. Dichocrinus symmetricus. Lyon and Casseday, Proc. Am. Acad. Arts and Sci. Bost., vol. 5, p. 20.
  - Chester Group: Breckinridge, Graysou, Edmonson, Hart, and Warren Counties, Kentucky.
- 1862. Dichocrinus elegans. Lyon and Casseday, Proc. Am. Acad. Arts and Sci. Bost., vol. 5, p. 22.
  - Subcarboniferous: Edmonson County, near Mammoth Cave, Kentucky.
- 1897. Talarocrinus symmetricus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 786, pl. 78, figs. 4a, b, 5.
  - St. Louis L. S.: Grayson, Edmonson, and Pulaski counties, Kentucky.

# Talarocrinus trijugis Miller and Gurley.

1894. Talarocrinus trijugis. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 45, pl. 3, figs. 9-11.

St. Louis Group: Rose Clare, Hardin County, Illinois.

### TAXOCRINUS Phillips, 1843.

### Taxocrinus communis Hall.

1864. Forbesiccrinus communis. Hall, 17th Rep. N. Y. State Cab. Nat. Hist., p. 55. Waverly Group: Richfield, Ohio.

1875. Forbesiocrinus communis. Hall and Whitfield, Pal. Ohio, vol. 2, p. 169, pl. 12, figs. 3-5.

Waverly Group. Richfield, Ohio.

### Taxocrinus crawfordsvillensis Miller and Gurley.

1894. Taxocrinus crawfordsvillensis. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 49, pl. 4, fig. 3.

Keokuk Group: Crawfordsville, Ind.

### Taxocrinus fletcheri Worthen.

1882. Taxocrinus fietcheri. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 31. Kınderhook Group: Marshalltown, Iowa.

1883. Taxocrinus Fletcheri. Worthen, Geol. Surv. Ill., vol. 7, p. 308, pl. 30, fig. 2. Kinderhook Group: Marshalltown, Iowa.

1890. Taxocrinus fletcheri. Wachsmuth and Springer, Geol. Surv. Ill., vol. 8, p. 197, pl. 15, tigs. 6, 9.
Kinderhook Group: Legrand, Iowa.

### Taxocrinus giddingsei Hall.

1858. Forbesiocrinus giddingsei. Hall, Geol. Iowa, vol. 1, pt. 2, p. 633, pl. 17, figs. 2-4.

Keokuk L. S: Boonville, Missouri.

1894. Taxocrinus giddingsei. Keyes, Mo. Geol. Surv., vol. 4, p. 223. Keokuk L. S.: Boonville, Missouri.

# Taxocrinus intermedius Wachsmuth and Springer.

1890. Taxocrinus intermedius. Wachsmuth and Springer, Geol. Surv. Ill., vol. 8, p. 199, pl. 15, fig. 11.

Kinderhook Group: Legrand, Iowa.

### Taxocrinus juvenis Hall.

1861. Forbesiocrinus juvenis. Hall, Desc. New Spec. Crin., p. 8. Burlington L. S.

1861. Forbesiocrinus jurenis. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 319. Burlington L. S.: Burlington, Iowa.

1872. Forbesiocrinus juvenis. Hall, Photo. Plates of Crinoids, pl. 7, fig. 3.

1893. Taxocrinus jurenis. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 35, pl. 3, figs. 21, 22.

Burlington L. S.: Burlington, Iowa.

# Taxocrinus kelloggi Hall.

1864. Forbesiocrinus kelloggi. Hall, 17th Rep. N. Y. State Cab. Nat. Hist., p. 56. Waverly Group: Richfield, Ohio.

1875. Forbesiocrinus Kelloggi. Hall and Whitfield, Pal. Ohio, vol. 2, p. 171, pl. 12, fig. 1.

Waverly Group: Richfield, Ohio.

### Taxocrinus meeki Hall.

1858. Forbesiocrinus meeki. Hall, Geol. Iowa, vol. 1, pt. 2, p. 631, pl. 17, fig. 3. Keokuk L. S.: Warsaw, Illinois.

Bull, 153-40

### Taxocrinus multibrachiatus Lyon and Casseday.

1859. Forbesiocrinus multibrachiatus. Lyon and Casseday. Am. Jour. Sci. (2), vol. 28, p. 235.

Subcarboniferous L. S. (Knobstone): Clear Creek, Hardin County, Kentucky; Washington and Montgomery counties, Indiana.

1896. Forbestocrinus multibrachiatus. Miller and Gurley, Bul. No. 8, Ill. State Mus. Nat. Hist., p. 55, pl. 4, fig. 1.

Knob Sandstone: Hardin County, Kentucky; Washington and Montgomery counties, Indiana.

### Taxocrinus multibrachiatus var. colletti White.

1881. Taxocrinus multibrachiatus var. colletti. White, 2d Ann. Rep. Dep. Stat. and Geol. Ind., p. 506, pl. 7, fig. 3.
Keokuk Group: Crawfordsville, Indiana.

# Taxocrinus ramulosus Hall.

1860. Forbesiogrinus ramulosus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 67. Burlington L. S.: Burlington, Iowa.

### Taxocrinus semiovatus Meek and Worthen.

1860. Forbesiocrinus ? semiovatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 389.

St. Louis L. S.: Hardin County, Illinois.

1866. Taxocrinus semiovatus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 272, pl. 20, figs. 4a, b.

St. Louis Group: Hardin County, Illinois.

### Taxocrinus shumardianus Hall.

1858. Forbesiocrinus shumardianus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 671, pl. 17, fig. 1.

St. Louis L. S.: St. Louis, Missouri.

1894. Taxocrinus shumardianus. Keyes, Mo. Geol. Surv., vol. 4, p. 224. St. Louis I. S.: St. Louis, Missouri.

### Taxocrinus splendens Miller and Gurley.

1896. Taxocrinus splendens. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 61, pl. 5, figs. 3, 4.

Keokuk Group: Crawfordsville, Indiana.

# Taxocrinus subovatus Miller and Gurley.

1890. Taxocrinus subovatus. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 347, pl. 5, fig. 3.

Keokuk Group: Near Canton, Indiana.

#### Taxocrinus tardus Hall.

1864. Forbesiocrinus lobatus var. tardus. Hall, 17th Rep. N. Y. State Cab. Nat. Hist., p. 56.

Waverly Group: Richfield, Ohio.

1875. Forbesicorinus tardus. Hall and Whitfield, Pal. Ohio, vol. 2, p. 170, pl. 12, fig. 2.

Waverly Group: Richfield, Ohio.

# Taxocrinus thiemei Hall.

1861. Forbesiocrinus thiemei. Hall, Desc. New Spec. Crin., p. 8. Burlington L. S.

Forbesiocrinus spiniger. Hall, Desc. New Spec. Crin., p. 9.
 Burlington L. S.

1861. Forbesiocrinus Thiemei. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 317. Burlington L. S.: Burlington, Iowa.

1861. Forbesiocrinus spinifer. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 318.
Burlington L. S.: Burlington, Iowa.

### Taxocrinus thiemei Hall—Continued.

- 1872. Forbesiocrinus Theimei. Hall, Photo. Plates of Crinoids, pl. 7, fig. 4.
- 1873. Taxocrinus Thiemei. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 399, pl. 4, fig. 1.

Burlington L. S.: Burlington, Iowa.

- 1874. Taxocrinus Thiemei. Meek, Am. Jour. Sci. (3), vol. 7, p. 191.
- 1894. Taxoorinus thiomi. Keyes, Mo. Geol. Surv., vol. 4, p. 223, pl. 30, fig. 5. Lower Burlington L. S.: Hannibal, Missouri.

### Taxocrinus ungula Miller and Gurley.

1896. Taxocrinus ungula. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 59, pl. 5, figs. 1, 2.

Keokuk Group: Crawfordsville, Indiana.

# Taxocrinus wetherbyi Miller and Gurley.

1895. Taxocrinus wetherbyi. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 41, pl. 4, figs. 3-5.

Kaskaskia Group: Pulaski County, Kentucky.

### Taxocrinus whitfieldi Hall.

- 1858. Forbesiocrinus whitfieldi. Hall, Geol. Iowa, vol. 1, pt. 2, p. 632. Keokuk L. S.: Warsaw, Illinois.
- 1860. Forbesiocrinus whitfieldi. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 88. Warsaw L. S. (not Keokuk as recorded in 1858).
- 1873. Onychocrinus Whitfieldi. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 552, pl. 20, fig. 3.

Chester Group: Opposite Kaskaskia in Randolph County, Illinois.

# TELEIOCRINUS Wachsmuth and Springer, 1881.

### Teleiocrinus adolescens Wachsmuth and Springer.

1897. Teleiocrinus adolescens. Wachsmuth and Springer, N. Am. Crin. Cam., p. 635, pl. 59, fig. 4.

Lower Burlington L. S.: Burlington, Iowa.

# Teleiocrinus ægilops. See Teleiocrinus umbrosus.

### Teleiocrinus althaea Hall.

- \*1861. Actinocrinus (Calathocrinus) althea. Hall, Desc. New Spec. Crin., p. 13. Burlington L. S.
- 1872. Actinocrinus (Strotocrinus) Althæa. Hall, Photo. Plates of Crin., pl. 4, fig. 13.
- 1897. Teleiocrinus althea. Wachsmuth and Springer, N. Am. Crin. Cam., p. 632,
  pl. 60, fig. 4; pl. 63, fig. 9.
  Upper Burlington L. S.: Burlington, Iowa.

### Teleiocrinus liratus Hall.

- 1860. Actinocrinus liratus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 1. Burlington L. S.: Burlington, Iowa.
- 1860. Actinocrinus subumbrosus. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 3. Burlington L. S.: Burlington, Iowa.
- 1872. Actinocrinus (Strotocrinus) liratus. Hall, Photo. Plates of Crin., pl. 4, fig. 3.
- 1873. Strotocrinus liratus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 385, pl. 7, fig. 2.
  - Burlington L. S.: Burlington, Iowa.
- 1894. Teliocrinus liratus. Keyes, Mo. Geol. Surv., vol. 4, p. 191, pl. 24, tig. 8. Upper Burlington L. S.: Ash Grove, Missouri.
- 1897. Teleiocrinus liratus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 888, pl. 60, fig. 3.
  - Upper Burlington L. S.: Burlington, Iowa.

#### Teleiocrinus rudis Hall.

- 1860. Actinocrinus rudis. Hall, Supp. vol. 1, pt. 2, Geol. Rep. Ia., p. 33. Burlington L. S.: Burlington, Iowa.
- \*1861. Actinocrinus insculptus. Hall, Desc. New Spec. Crin, p. 12. Burlington L. S.
- 1861. Actinocrinus erodus. Hall, Desc. New Spec. Crin., p. 12. Burlington L. S.
- 1861. Actinocrinus clivosus. Hall, Jour. Bost. Nat. Hist., vol. 7, p. 274. Burlington L. S.: Burlington, Iowa.
- 1897. Teleiocrinus rudis. Wachsmuth and Springer, N. Am. Crin. Cam., p. 630, pl. 59, flgs. 1-3.
  Upper Burlington L. S.: Burlington, Iowa.

# Teleiocrinus tenuiradiatus Hall.

- 1861. Actinocrinus tenuiradiatus. Hall, Desc. New Spec. Crin., p. 12. Burlington L. S.
- 1897. Teleiocrinus tenuiradiatus. Wachsmuth and Springer, N. Am. Crin. Cam., p. 634, pl. 59, figs. 5, 6.
  Upper Burlington L. S.: Burlington, Iowa.

### Teleiocrinus umbrosus Hall.

- 1858. Actinocrinus umbrosus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 590, pl. 9, figs. 3a, b. Burlington L. S.: Burlington, Iowa.
- 1860. Actinocrinus agilops. Hall, Supp. vol. 1, pt. 2, Geof. Rep. Ia., p. 5. Burlington L. S.: Quincy, Illinois.
- 1869. Actinocrinites delicatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 156.

Upper Burlington L. S.: Burlington, Iowa.

1873. Actinocrinites delicatus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 343. pl. 8, fig. 2.

Upper Burlington L. S.: Burlington, Iowa.

- 1873. Strotocrinus umbrosus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 360, pl. 8, fig. 5.
  Burlington L. S.: Burlington, Iowa.
- 1874. Actinocrinites delicatus. Meek, Am. Jour. Sci. (3), vol. 7, p. 192.
- 1893. Telecorinus agilops. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 20, pl. 2, figs. 27, 28.

Burlington L. S.: Quincy, Illinois.

- 1894. Telioorinus umbrosus. Keyes, Mo. Geol. Surv., vol. 4, p. 190. Upper Burlington L. S.: Ashgrove, Missouri.
- 1897. Teleiocrinus umbrosus. Wachamuth and Springer, N. Am. Crin. Cam., p 628, pl. 59, fig. 7; pl. 60, figs. 2a-d.
  - Upper Burlington L. S.: Burlington, Iowa; Quincy, Illinois.

# TELLINOMYA Hall, 1847.

### Tellinomya protensa Hall.

1852. Tellinomya protensa. Hall, Stansb. Exped. Gt. Salt Lake, p. 412, pl. 2, fig. 3. Carboniferous: Near Le Bonte.

# TEMNOCHEILUS McCoy, 1844.

### Temnocheilus conchiferous Hyatt.

- 1891. Temnocheilus Conchiferous. Hyatt, 2d Ann. Rep. Geol. Surv. Tex., p. 329, figs. 23, 24.
  - Carboniferous: Texas.
- 1893. Temnocheilus conchiferus. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 391. Carboniferous: Military Crossing, Baylor County, Texas.

### Temnocheilus coxanus Meek and Worthen.

- 1870. Nautilus (Temnochilus) Coranus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 50.
  - St. Louis L. S.: Near New Providence, Indiana.
- 1873. Nautilus (Temnocheilus) Coxanus. Meek and Worthen. Geol. Surv. Ill., vol. 5, p. 543, pl. 23, fig. 1.
  - St. Louis Group: Waterloo, Illinois; Greencastle, Indiana.
- 1891. Temnocheilus coxanus. Foord, Cat. Foss. Ceph. Brit. Mus., vol. 2, p. 153. St. Louis L. S.: Putnam County, Indiana.
- 1893. Temnocheilus coxanus. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 392. Carboniferous: Ballinger, Texas.

# Temnocheilus crassus Hyatt.

- 1891. Temnocheilus orassus. Hyatt, 2d Ann. Rep. Geol. Surv. Tex., p. 333, figs. 27-29.
  - Carboniferous: Near Oswego, Kansas.
- 1893. Temnocheilus crassus. Hay, Trans. Kansas Acad. Sci., vol. 13, p. 38, figs. 3-5. Carboniferous: Oswego, Kansas.

### Temnocheilus depressus Hyatt.

1891. Temnocheilus depressus. Hyatt, 2d Ann. Rep. Geol. Surv. Tex., p. 331, figs. - 25. 26.

Carboniferous: Near Oswego, Kansas.

### Temnocheilus forbesianus McChesney.

- 1860. Nautilus forbesianus. McChesney, Desc. New Pal. Foss., p. 6... Coal Measures: Carnahan's Mine, Mercer County, Illinois.
- 1865. Nautilus Forbesianus. McChesney, Ill. New Spec. Foss., pl. 3, figs. 4a-b.
- 1868. Nautilus Forbesianus. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 50, pl. 3, figs. 4a, b.
  - Coal Measures: Carnahan's Mine, Mercer County, Illinois.
- \*1884. Nantilus Forbesianus. White, 13th Rep. Geol. Surv. Ind., p. 165, pl. 36, figs. 3, 4.
  - Coal Measures: Newport, Indiana.
- 1887. Nautilus forbesianus. Herrick, Bull. Den. Univ., vol. 2, p. 146, pl. 14, fig. 13.
  Coal Measures: Flint Ridge, Ohio.
- 1891. Temnocheilus Forbesianus. Hyatt, 2d Ann. Rep. Geol. Surv. Tex., p. 330. Carboniferous: Texas.
- 1894. Nautilus forbesianus. Keyes, Mo. Geol. Surv., vol. 5, p. 223, pl. 56, figs. 4a, b. Upper Coal Measures: Kansas City, Missouri.

### Temnocheilus greenense Miller and Gurley.

1897. Temnochilus greenense. Miller and Gurley, Bull. No. 12, Ill. State Mus. Nat. Hist., p. 52, pl. 5, fig. 3.

Kaskaskir Group: Fish Creek, Green County, Indiana.

### Temnocheilus latus Meek and Worthen.

- 1870. Nautilus (Temnocheilus) latus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 49.
  - Lower Coal Measures: Carbon Cliff Mines, Rock Island County, Illinois.
- 1873. Nautilus (Temnochilus) latus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 608, pl. 30, fig. 2.
  - Coal Measures: Carbon Cliff, Rock Island County, Illinois.
- 1891. Temnocheilus latus. Hyatt, 2d Ann. Rep. Geol. Surv. Tex., p. 330. Carboniferous: Near Oswego, Kansas.
- 1891. Temnocheilus latus. Foord, Cat. Foss. Ceph. Brit. Mus., vol. 2, p. 151.
  Coal Measures: Illinois.

Temnocheilus scottense Worthen. See Koninckioceras scottense.

# Temnocneilus winslowi Meek and Worthen.

1870. Nautilus (Temnochilus) Winslowi. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 50.

Lower Coal Measures: Danville, Illinois.

1873. Nautilus (Temnocheilus) Winslowi. Meek and Worthen, Geol. Sury Ill., vol. 5, p. 609, pl. 32, fig. 2.
Coal Measures: Danville, Ill.

1884. Nautilus Winslowi. White, 13th Rep. Geol. Surv. Ind., p. 165, pl. 36, figs. 1, 2.

Coal Measures: Indiana (†): 1888. Nautilus winslowi. Keyes, Proc. Acad. Nat. Sci. Phil., p. 242. Lower Coal Measures: Des Moines, Iowa.

1891. Nautilus (Temnocheilus) winslowi. White, Bull. U. S. Geol. Surv., No. 77, p. 23, pl. 3, figs. 1-5.

Permian: Military Crossing of the Big Wichita, Baylor County, Texas.

1894. Nautilus winslowi. Keyes, Mo. Geol. Surv., vol. 5, p. 223, pl. 56, fig. 2. Upper Coal Measures: Lexington, Missouri.

### TEREBRATULA Llhwyd, 1699.

Terebratula arcuata. See Dielasma shumardanum.

Terebratula argentea. See Seminula argentea.

Terebratula bisacula McChesney.

1860. Terebratula bisacula. McChesney, Desc. New Pal. Foss., p. 82. Kaskaskia Group.: Chester and Golconda, Illinois.

Terebratula bovidens. See Dielasma bovidens.

Terebratula brevilobata Swallow.

1863. Terebratula brerilobata. Swallow, Trans. St. Louis Acad. Sci., vol. 2, p. 84.
Archimedes L. S.: Ste. Genevieve County, Missouri.

Terebratula burlingtonensis. See Dielasma burlingtonensis.

Terebratula elongata. See Dielasma bovidens.

Terebratula formosa. See Dielasma formosa.

Terebratula geniculosa. See Dielasma bovidens.

Terebratula gorbyi. See Dielasma gorbyi.

Terebratula gracilis. See Terebratula swallovana.

Terebratula hastata. See Dielasma hastata and Dielasma bovidens.

Terebratula inconstans. See Cryptonella inconstans.

Terebratula inornata McChesney.

1860. Terebratula inornata. McChesney, Desc. New Pal. Foss., p. 48.
Coal Measure L. S.: Sangamon County, Illinois.
Also Carboniferous L. S. as low down as Keokuk division.

# Terebratula lapillus Morton.

1836. Terebratula lapillus. Morton, Am. Jour. Sci. (1), vol. 29, p. 153, pl. 26, fig. 36. Coal Measures: Ohio Valley.

Terebratula marcyi. See Eumetria marcyi.

Terebratula millepunctata. See Dielasma bovidens.

Terebratula mormoni. See Hustedia mormoni.

# Terebratula nuciformis Morton.

1836. Terebratula nuciformis. Morton, Am. Jour. Sci. (1), vol. 28, p. 150, pl. 2, fig. 5. Conl Measures: Ohio Valley.

Terebratula occidentalis. See Dielasme occidentalis.

Terebratula parva. See Seminula parva.

Terebratula perinflata Shumard.

1859. Terebratula perinflata. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 392. White Permian L. S.: Guadalupe Mountains.

Terebratula plano-sulcata. See Seminula argentea and Cleiothyris roissyi.

Terebratula pugnus. See Pugnax uta.

Terebratula rockymontana. See Pugnax rockymontana.

Terebratula rowleyi. See Dielasma rowleyi.

Terebratula royssii. See Cliothyris roissyi.

Terebratula sacculus. See Dielasma sacculus.

Terebratula serpentaria. See Eumetria marcyi.

Terebratula subretziaforma McChesney.

1861. Terebratula subretziaforma. McChesney, Desc. New Foss., p. 82. Kaskaskia: Fountain Bluff, Illinois.

Terebratula subtilita. See Seminula argentea.

Terebratula swallovana Miller.

1863. Terebratula gracilis. Swallow, Trans. St. Louis Acad., vol. 2, p. 83. Archimedes L. S.: St. Mary's, Missouri; Chester, Illinois.

1883. Terebratula swallovana. Miller, Am. Pal. Foss., 2d ed., p. 299.

Terebratula trinuclea. Seminula trinuclea.

Terebratula turgida. See Dielasma turgida.

Terebratula uta. See Pugnax uta.

Terebratula utah Hall and Whitfield.

1877. Terebratula Utah. Hall and Whitfield, U. S. Geol. Expl. 40 Par., vol. 4, p. 258, pl. 4, fig. 18.

Lower Carboniferous L. S. (Waverly?): Cottonwood Divide, 800 feet east of Reed and Benson's mine, Wasatch range, Utah.

(TERMES Linnaeus 1748.)

Termes contusus Scudder. See Didymophleps contusa,

THAMNISCUS King, 1849.

### Thamniscus divaricans Ulrich.

1890. Thamniscus divarioans. Ulrich, Geol. Surv. Ill., vol. 8, p. 608, pl. 62, figs. 6-6c.

Keokuk Group: King's Mountain, Kentucky.

# Thamniscus furcillatus Ulrich.

1890. Thamniscus furcillatus. Ulrich, Geol. Surv. Ill., vol. 8, p. 609, pl. 62, figs. 9-9b.

Chester Group: Chester and Kaskaskia, Illinois; Sloan's Valley and Litchfield, Kentucky.

1894. Thamniscus furcillatus. Keyes, Mo. Geol. Surv., vol. 5, p. 31, pl. 33, fig. 6. Kaskaskia L. S.: Ste. Genevieve, Missouri.

### Thamniscus octonarius Ulrich.

1890. Thamniscus octonarius. Ulrich, Geol. Surv. Ill., vol. 8, p. 611, pl. 62, figs. 7-7b.

Upper Coal Measures: Greenwood County, Kansas.

# Thamniscus ramulosus Ulrich.

1890. Thamniscus ramulosus. Ulrich, Geol. Surv. Ill., vol. 8, p. 610, pl. 62, figs. 4-4b.

Chester Group: Sloan's Valley, Kentucky; Chester, Illinois.

### Thamniscus ramulosus var. sevillensis Ulrich.

1890. Thamniscus ramnlosus var. serillensis. Ulrich, Geol. Surv. Ill., vol. 8, p. 610, pl. 55, fig. 6; pl. 62, figs. 5, 5a.
Lower Coal Measures: Seville, Illinois.

Dower Coar Measures: Berrine, 1

# Thamniscus sculptilis Ulrich.

1890. Thamniscus sculptilis. Ulrich, Geol. Surv. Ill., vol. 8, p. 608, pl. 62, figs. 8-8b. Keokuk Group: King's Mountain, Kentucky.

# THAMNODICTYA Hall, 1884.

### Thamnodictya newberryi Hall.

1863. Dictyophyton newberryi. Hall, 16th Rep. N. Y. State Cab. Nat. Hist., p. 87. Waverly Group: Cuyahoga Falls and Richfield, Ohio.

1884. Thamnodictya Newberryi. Hall, 35th Rep. N. Y. State Mus. Nat. Hist., p. 477, pl. 18, figs. 10, 11.

Waverly S. S.: Cuyahoga Falls and Richfield, Ohio.

### THRINCOCERAS Hvatt, 1893.

### Thrincoceras depressum Hyatt.

1893. Thrincoceras depressum. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 430, figs. 9, 10.

Carboniferous: Bullitt County, Kentucky.

### Thrincoceras kentuckiense Hyatt.

1893. Thrinooceras kentuckiense. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 432, figs. 11-15.

Carboniferous: Franklin County, Kentucky.

### TITANOCERAS Hyatt, 1883.

### Titanoceras ponderosum Meek.

1872. Nautilus ponderosus. Meek, U. S. Geol. Surv. Nebr., p. 236, pl. 3, figs. 7a, b. Upper Coal Measures: Plattsmouth, Nebraska; Lasalle, Illinois; Iowa.

1883. Titanoceras ponderosum. Hyatt, Proc. Bost. Soc. Nat. Hist., vol. 22, p. 290.

1894. Nautilus ponderosus. Keyes, Mo. Geol. Surv., vol. 5, p. 222. Upper Coal Measures: Kansas City, Missouri.

1896. Nautilus ponderosus. Keyes, Proc. Iowa Acad. Sci., vol. 3, p. 76. Upper Coal Measures: Kansas City, Missouri.

### TITANOPHAMA Brongniart.

### Titanophasma jucunda Scudder.

1884. Titanophasma jucunda. Scudder, Proc. Am. Acad. Arts and Sci., vol. 20, p. 169.

Carboniferous: Near Pittston, Pennsylvania.

### TORYNIFER Hall, 1894.

# Torynifer criticus Hall and Clarke.

1895. Torynifer criticus. Hall and Clarke, Pal. N. Y., vol. 8, pt. 2, pl. 84, figs. 34, 35.

St. Louis Group: La Rue, Kentucky.

1897. Torynifer criticus. Hall, 14th Rep. N. Y. State Geol., p. 353, pl. 9, fig. 1. St. Louis Group: La Rue, Kentucky.

# TRACHYDOMIA Meek and Worthen, 1866.

### Trachydomia nodosum. Meek and Worthen.

1860. Naticopsis nodosus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 463.

Lower Coal Measures: St. Clair County, Illinois.

1866. Naticopsis nodosa. Meek and Worthen, Geol. Surv. Ill., vol. 2, 366, pl. 31, figs. 2a, b.

Lower Coal Measures: St. Clair County, Illinois.

1888. Naticopsis nodosa. Herrick, Bull. Den. Univ., vol. 4, pl. 11, fig. 9. Coal Measures: Fultonham, Obio.

1894. Trachydomia nodosum. Keyes, Mo. Geol. Surv., vol. 5, p. 201. Upper Coal Measures: Kansas City, Missouri.

# Trachydomia nodosum var. hollidayi Meek and Worthen.

1860. Naticopeis Hollidayi. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 463.

Coal Measures: Hodge's Creek, Macoupin County, Illinois.

1866. Naticopsis nodosa var. Hollidayi. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 367. pl. 31, figs. 3a, b.

Lower Coal Measures: Hodge's Creek, Macoupin County, Illinois.

### Trachydomia nodulosa Worthen.

1884. Trachydomia nodulosa. Worthen, Bull. No. 2, Ill. State Mus. Nat. Hist., p. 8.

Coal Measures: Peoria County, Illinois.

1891. Trachydomia nodulosa. Worthen, Geol. Surv. Ill., vol. 8, p. 146, pl. 23, figs. 11, 11a.

Coal Measures: Peoria County, Illinois.

### Trachydomia wheeleri Swallow.

1860. Littorina Wheeleri. Swallow, Trans. St. Louis Acad. Sci., vol. 1, p. 658. ('oal Measures: Monroe County, Missouri.

1873. Naticopsis Wheeleri. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 595, pl. 28, fig. 3.
Upper and Lower Coal Measures: Springfield and Alton, Illinois.

1881. Naticopsis wheeleri var. White, U. S. Geog. Surv. W. 100 Merid., vol. 3, Supp., Appendix, p. xxxiii, pl. 4, figs. 6a, b. Carboniferous: Near Taos, New Mexico.

1884. Naticopsis Wheeleri. White, 13th Rep. Geol. Surv. Ind., p. 162, pl. 32, figs. 13, 14.

Upper Coal Measures: Western part of Vigo County, Indiana.

1889. Trachydomia wheeleri. Keyes, Am. Geol., vol. 4, p. 195, fig. 2.

1891. Trachydomia wheeleri. Keyes, proc. Acad. Nat. Sci. Phil., p. 257. Lower Coal Measures: Des Moines, Iowa.

1894. Trachydomia wheeleri. Keyes, Mo. Geol. Surv., vol. 5, p. 200, pl. 55, fig. 8. Coal Measures: Clinton and Kansas City, Missouri; Peoria, Springfield and Alton, Illinois; Des Moines, Iowa.

# TRACHYPORA Edwards and Haime, 1851.

# Trachypora austini Worthen.

1890. Trachypora austini. Worthen, Geol. Surv. Ill., vol. 8, p. 81, pl. 11, figs. 1-1d. Coal Measures: Labette County, Kansas.

### TREMATASTER Worthen and Miller, 1883.

### Tremataster difficilis Worthen and Miller.

1883. Tremataster difficilis. Worthen and Miller, Geol. Surv. III., vol. 7, p. 330, pl. 31, figs. 3a, b.

Chester L. S.: Prairie du Long Creek, Monroe County, Illinois.

# TREMATOCERAS Hyatt, 1883.

### Trematoceras altidorsalis Winchell.

1862. Nautilus (Trematodiscus) altidorealis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 429.

Marshall Group: Marshall, Michigan.

# Trematoceras discoidalis Winchell.

1862. Nautilus (Trematodiscus) discoidalis. Winchell, Am. Jour, Sci. (2), vol. 33, p. 360.

Marshall S. S.: Marshall and Battle Creek, Michigan.

1865. Nautilus (Trematodiscus) discoidalis? Winchell, Proc. Acad. Nat. Sci. Phil., p. 132.

Marshall Group: Rockford, Indiana.

# Trematoceras konincki Wetherby.

1881. Trematodiscus konincki. Wetherby, Jour. Cinn. Soc. Nat. Hist., vol. 4, p. 79, pl. 2, fig. 4.

Lower Waverly Group: King's Mountain Tunnel, on Cincinnati Southern Railroad, Kentucky.

### Trematoceras meekianus Winchell.

1862. Nautilus (Trematodiscus) Meekianus. Winohell, Am. Jour. Sci. (2), vol. 33, p. 360.

Marshall S. S.: Marshall, Michigan.

### Trematoceras ohioense Miller and Faber.

1892. Trematoceras ohioense. Miller and Faber, Jour. Cinn. Soc. Nat. Hist., vol. 14, p. 168, pl. 6, figs. 4, 5.

Upper Waverly Group: Near Sciotoville, Ohio.

### Trematoceras planidorsalis Winchell.

1862. Nautilus (Trematodiscus) planidorealis. Winchell, Am. Jour. Sci. (2), vol. 33, p. 358.

Marshall S. S.: Marshall, Michigan.

### Trematoceras rockymontanus Miller.

1881. Trematodiscus rockymontanus. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 4, p. 312, pl. 7, fig. 6.

Subcarboniferous: Lake Valley Mining District, New Mexico.

### Trematoceras striatulus Winchell.

1862. Nautilus (Trematodiscus) striatulus. Winchell, Am. Jour. Sci. (2), vol. 33, p. 359.

Marshall S. S.: Marshall, Michigan.

# Trematoceras strigatus Winchell.

1862. Nautilus (Trematodiscus) strigatus. Winchell, Proc. Acad. Nat. Sci. Phil., p. 428.

Marshall Group: Marshall, Michigan.

# Trematoceras sulcatus Meek and Worthen.

1866. Nautilus (Trematodiscus) sulcatus? Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 274.

Chester Group: Ste. Genevieve County, Missouri.

### (TREMATOCRINUS Hall, 1860.)

### Trematocrinus fiscellus. See Gilbertsocrinus fiscellus.

Trematocrinus papillatus. See Gilbertsocrinus papillatus.

Trematocrinus reticulatus. See Gilbertsocrinus reticulatus.

Trematocrinus robustus. See Gilbertsocrinus robustus.

Trematocrinus tuberculosus. See Gilbertsocrinus tuberculosus.

Trematocrinus typus. See Gilbertsocrinus typus.

# (TREMATODISCUS Meek and Worthen, 1861.)

Trematodiscus konincki Wetherby. See Trematoceras konincki.
Trematodiscus rockymontanus Miller. See Trematoceras rockymontanus.

# TREMATOPORA Hall, 1852.

# Trematopora? americana Miller.

1881. Trematopora americana. Miller, Jour. Cinn. Soc. Nat. Hist., vol. 4, p. 312, pl. 7, figs 5, 5a.

Subcarboniferous: Lake Valley Mining District, New Mexico.

### Trematopora? fragilis Winchell.

1863. Trematopora? fragilis. Winchell, Proc. Acad. Nat. Sci. Phil., p. 3.
Base of Burlington L. S.: Burlington, Iowa.

# Trematopora? vesiculosa Winchell.

1863. Trematopora? vesiculosa. Winchell, Proc. Acad. Nat. Sci. Phil., p. 3.
Base of Burlington L. S.: Burlington, Iowa.
(†) Waverly S. S.: Ohio.

1865. Trematopora? resiculosa. Winchell, Proc. Acad. Nat. Sci. Phil., p. 112. Marshall Group: Alan's Quarry, Hillsdale, Michigan.

1870. Trematopora? vesiculosa. Winchell, Proc. Am. Phil. Soc., vol. 11, p. 247. Waverly Group: Sciotoville, Ohio.

### TRIBOLOCERAS Hyatt, 1883.

### Triboloceras digonum Meek and Worthen.

1860. Nautilus (Discus) digonus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 470.

Goniatite Beds: Rockford, Indiana.

1866. Nautilus digonus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 163, pl. 14, figs. 9a-d.

Goniatite Bed: Rockford, Indiana.

Kinderhook Group: Jersey County, Illinois; Central Missouri.

1893. Triboloceras (Tremat.) digonum. Hyatt, 4th Ann. Rep. Geol. Surv. Tex., p. 418.

1894. Nautilus digonus. Keyes, Mo. Geol. Surv., vol. 5, p. 222. Kinderhook Group: Callaway County, Missouri.

### TRICELOCRINUS Meek and Worthen, 1868.

# Tricolocrinus meekianus Etheridge and Carpenter.

1886. Tricoelocrinus Meekianus. Etheridge and Carpenter, Cat. Blast., p. 208, pl. 16, figs. 17, 18.

St. Louis Group: Spegen Hill, Indiana.

# Tricœlocrinus obliquatus Roemer.

\*1851. Pentatremites obliquatus. Roemer, Archiv. fur Naturgesch., Jahrg. 17, p. 367, taf. 6, figs. 11a, b.

1869. Pentremites obliquatus? Safford, Geol. of Tenn., p. 346, pl. 6, figs. 2a-d. St. Louis Group: Clarksville, Tennessee.

# Tricologrinus obliquatus Roemer—Continued.

1875. Pentremites (Tricalocrinus) obliquatus. Meek and Worthen, Geol. Surv. Ill., vol. 6, p. 521, pl. 31, fig. 4.

Warsaw beds: Monroe County, Illinois, and not in Archimedes beds of Randolph County, as cited by Roemer.

1886. Tricalocrinus obliquatus. Etheridge and Carpenter, Cat. Blast., p. 206. pl. 18, figs. 10-13.

St. Louis L. S.: Washington, Indiana.

# Tricoclocrinus woodmani Meek and Worthen.

1868. Pentrenites (Troostocrinus) Woodmani. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 356.

Keokuk Group?: Salem, Indiana.

1873. Pentremites (Troostocrinus?) Woodmani. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 506, pl. 16, fig. 4.

Keokuk Group ?: Salem, Indiana.

1874. Pentremites (Troostoorinus?) Woodmani. Meek, Am. Jour. Sci. (3), vol. 7, p. 375.

### TROUHITA Schumacher, 1817.

### Trochita? carbonaria Meek and Worthen.

1866. Trochitat carbonaria. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 270.

Chester Group: Ste. Genevieve County, Missouri.

## TROCHOPHYLLUM Milne-Edwards and Haime, 1851.

# Trochophyllum verneuilanum Milne-Edwards and Haime.

1851. Trochophyllum verneutlanum. Milne-Edwards and Haime, Monog.des Polyp. Foss., p. 357, pl. 5, figs. 6-6a.

Carboniferous: Hills 7 miles from Louisville, Kentucky.

1860. Trochophyllum Vorneuilanum. Milne-Edwards, Hist. Nat. Corr., vol. 3, p. 359.

Carboniferous: Kentucky.

### (TROCHUS Adanson, 1757.)

Trochus missouriensis. See Pleurotomaria missouriensis.

TROOSTOCRINUS Shumard, 1865.

# Troostocrinus grosvenori Shumard.

1858. Pentremites Groevenori. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 240, pl. 9, figs. 2a-d.

Archimedes L. S.: Spergen Hill, Indiana.

1860. Pentremites grosrenori. Hall, Supp., vol. 1, pt. 2, Geol. Rep. Ia., pl. 1, fig. 3a, b.

Troostocrinus nitidulus. See Metablastus nitidulus.

Troostocrinus wachsmuthi. See Metablastus gurleyi.

# TROPIDOCARIS Beecher, 1884.

# Tropidocaris alternata Beecher.

1884. Tropidocaris alternata. Beecher, Rep. PPP, 2d Geol. Surv. Penn., p. 19, pl. 2, figs. 7, 8.

Waverly Group: Warren, Pennsylvania.

1888. Tropidocaris alternata. Hall and Clarke, Pal. N. Y., vol. 7, p. 186, pl. 31, figs. 14, 15.

Waverly Group: Warren, Pennsylvania.

# TURBO Klein, 1753.

# Turbo guadalupensis Shumard.

1859. Turbo Guadalupensis. Shumard. Trans. St. Louis Acad. Sci., vol. 1, p. 398. Dark Permian L. S.: Guadalupe Mountains.

### Turbo helicinus Shumard.

1859. Turbo helicinus (†) Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 398. White Permian L. S.: Guadalupe Mountains.

# Turbo insectus Conrad.

1835. Turbo insectus. Conrad, Trans. Geol. Soc. Penn., vol. 1, pt. 2, p. 267, pl. 12, fig. 4.

# Turpo obesus Shumard.

1858. Turbo obesus. Shumard, Trans St. Louis Acad. Sci., vol. 1, p. 202. Upper Coal Measures: Iowa Point, Nebraska.

### Turbo tabulatus. See Pleurotomaria tabulata.

### Turbo texana Shumard.

1859. Turbo Taranus. Shumard, Trans. St. Louis Acad. Sci., vol. 1, p. 400. Coal Measures: 4 miles west of Sierra Hueco, El Paso County, Texas.

# Turbo (undetermined species).

1868. Turbo (two species). Dawson, Acad. Geol., p. 309. Carboniferous L. S.: Pugwash and Windsor, Nova Scotia.

# (TURBONILLA Leach, 1826.)

### Turbonilla swalloviana. See Aclisina swallovana.

(TURRITELLA Lamark, 1801.)

### Turritella stevensana. See Aclisina stevensana.

# ULOCRINUS Miller and Gurley, 1890.

# Ulocrinus blairi Miller and Gurley.

1894. Ulocrinus blairi. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 57, pl. 5, figs. 16-18.

# Upper Coal Measures: Weston, Missouri.

### Ulocrinus buttsi Miller and Gurley.

1890. Ulocrinus buttsi. Miller and Gurley, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 7, pl. 1, figs. 5, 6.

Upper Coal Measures: Kansas City, Missouri.

1890. Ulcorinus buttsi. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 331, pl. 1, figs. 5, 6.

Upper Coal Measures: Kansas City, Missouri.

1890. Ulocrinus buttsi. Anon., The Naturalist (Kansas City), vol. 4, No. 10, fig. Coal Measures: Kansas City, Missouri.

1894. Cromyocrinus buttsi. Keyes, Mo. Geol. Surv., vol. 4, p. 216. Upper Coal Measures: Kansas City, Missouri.

### Ulocrinus kansasensis Miller and Gurley.

1890. Ulocrinus kansasensis. Miller and Gurley, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 8, pl. 1, figs. 7-10.

Upper Coal Measures: Kansas City, Missouri.

1890. Ulocrinus kansasensis. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 332, pl. 1, figs. 7-10.

Upper Coal Measures: Kansas City, Missouri.

1894. Cromyocrinus kansasensis. Keyes, Mo. Geol. Surv., vol. 4, p. 216, pl. 24, flg. 7.
Upper Coal Measures: Kansas City, Missouri.

### Ulcerinus occidentalis Miller and Gurley.

1894. Ulcorinus occidentalis. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 58, pl. 6, figs. 6-8.

Upper Coal Measures: Gilpin, Missouri.

### Ulocrinus (species undetermined).

1890. Ulcorinus sp. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 370, pl. 10, figs. 9-13.

# ULRICHIA Jones, 1890.

### Ulrichia ? confluens Ulrich.

1891. Ulrichia (†) confluens. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 203, pl. 12, figs. 11a, b.

Chester Group: Near Grayson Springs, Kentucky.

### Ulrichia emarginata Ulrich.

1891. Ulrichia emarginata. Ulrich, Jour. Cinn. Soc. Nat. Hist., vol. 13, p. 203, pl. 12, figs. 10a-c.

Chester Group: Near Grayson Springs, Kentucky.

(UNIO Philippson, 1788.)

# (Unio petrosus Morton.)

1836. Unio petrosus. Morton, Am. Jour. Sci. (1), vol. 29, p. 149, pl. 1, fig. 17. Coal Measures: Ohio Valley.

# (Unio saxulum Morton.)

1836. Unio saxulum. Morton, Am. Jour. Sci. (1), vol. 29, p. 149, pl. 1, fig. 20. Coal Measures: Ohio Valley.

### (Unio terrenus Morton.)

1836. Unio terrenus. Morton, Am. Jour. Sci. (1), vol. 29, p. 149, pl. 1, fig. 19. Coal Measures: Ohio Valley.

### (Unio tumulatus Morton.)

1836. Unio tumulatus. Morton, Am. Jour. Sci. (1), vol. 29, p. 149, pl. 1, figs. 18, 21. Coal Measures: Ohio Valley.

### (UPHANTÆNIA Vanuxem, 1842.)

# Uphantænia dawsoni Whitfield. See Physospongia dawsoni.

VALVULINA D'Orbigny, 1826.

# Valvulina bulloides Brady.

1876. Valvulina bulloides. Brady, Monog. Carb. and Perm. Foram., p. 89, pl. 4, figs. 12-15.

Upper Coal Measures: Southern Iowa.

### Valvulina decurrens Brady.

1876. Valvulina decurrens. Brady, Monog. Carb. and Perm. Foram., p. 87, pl. 3, figs. 17, 18.

Upper Coal Measures: Southern Iowa and mouth of Platte River.

### Valvulina palæotrochus Ehrenberg.

1876. Valvulina palaeotrochus. Brady, Monog. Carb. and Perm. Foram., p. 83, pl. 4, figs. 1-4.

Upper Coal Measures: Southern Iowa, and mouth of Platte River.

# Valvulina plicata Brady.

1876. Valvulina plicata. Brady, Monog. Carb. and Perm. Foram., p. 88, pl. 4, tigs. 10, 11.

Upper Coal Measures: Southern lows.

# Valvulina rudis Brady.

1876. Valvulina rudis. Brady, Monog. Carb. and Perm. Foram., p. 90, pl. 3, figs. 19, 20.

Upper Coal Measures: Southern Iowa.

### VASOCRINUS Lyon, 1857.

### Vasocrinus hexadactylus Lyon and Casseday.

- Cyathocrinus hexadactylus. Lyon and Casseday, Am. Jour. Sci. (2), vol. 29, p. 74.
  - Subcarboniferous: Clear Creek, Hardin County, Kentucky; Montgomery County, Indiana.
- Cyathocrinus lyoni. Hall, Desc. New Spec. Crin., p. 5.
   Keokuk L. S.
- 1861. Cyathocrinus Lyoni. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 298. Keokuk L. S.: Crawfordsville, Indiana.
- 1872. Cyathocrinus Lyoni. Hall, Photo. Plates of Crinoids, pl. 5, figs. 12, 13.

### Vasocrinus macropleurus Hall.

- 1861. Cyathocrinus macropleurus. Hall, Desc. New Spec. Crin., p. 5. Burlington L. S.
- 1861. Cyathocrinus macropleurus. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 295. Burlington L. S.: Burlington, Iowa.

# WAAGENOCERAS Gemmellaro, 1888.

### Waagenoceras cumminsi White.

- 1889. Ptychites cumminsi. White, Am. Nat., vol. 23, p. 117, pl. 1, figs. 4-8. Permian: Baylor County, Texas.
- 1891. Waagenoceras cumminsi. White, Bull. U. S. Geol. Surv., No. 77, p. 20, pl. 1, figs. 4-8.
  Permian: Military Crossing of the Big Wichita, Baylor County, Texas.

# (WALDHEIMA King, 1849.)

# Waldheimia compacta. See Cryptacanthia compacta.

# WOODOCRINUS De Koninck, 1854.

### Woodocrinus æqualis Hall.

- 1861. Scaphiocrinus æqualis. Hall, Desc. New Spec. Crin., p. 8. Keokuk L. S.
- 1861. Scaphiocrinus æqualis. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 316. Keokuk L. S.: Crawfordsville, Indiana.
- 1872. Scaphiocrinus aqualis. Hall, Photo Plates of Crin., pl. 5, fig. 10.
- 1873. Scaphiocrinus equalis. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 494, pl. 15, fig. 6.
  Keokuk Group: Crawfordsville, Indiana.

### Woodocrinus arboreus Worthen.

1873. Zeacrinus arboreus. Worthen, Geol. Surv. Ill., vol. 5, p. 534, pl. 20, fig. 5. St. Louis L. S. 7: Near Huntsville, Alabama.

### Woodocrinus asper Meek and Worthen.

- 1869. Zeacrinus asper. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 150. Upper Burlington L. S.: Burlington, Iowa.
- 1873. Zeaorinus asper. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 430, pl. 1, fig. 7.
   Burlington L. S.: Burlington, lows.

### Woodocrinus asperatus Worthen.

1882. Poteriocrinus asperatus. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 12.

Upper part of geodiferous shales of Keokuk Group: 1 mile below Keokuk, Iowa.

1883. Poteriocrinus asperatus. Worthen, Geol. Surv. Ill., vol. 7, p. 280, pl. 28, fig. 2.

Keokuk Group (upper part of geode bed): 1 mile below Keokuk, Iowa.

### Woodocrinus bursæformis White.

1862. Poteriocrinus bursæformis. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 10. Lower Burlington L. S.: Burlington, Iowa.

### Woodocrinus claytonensis Worthen.

1882. Poteriocrinus claytonensis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist. p. 18.

Warsaw Beds: Near Clayton, Adams County, Illinois.

1883. Poteriocrinus Claytonensis. Worthen, Geol. Surv. Ill., vol. 7, p. 288, pl. 30, fig. 6.

Warsaw Beds: Near Clayton, Adams County, Illinois.

### Woodocrinus concinnus Meek and Worthen.

1870. Poteriocrinus (Zeacrinus?) concinnus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 26.

Keokuk Group: Crawfordsville, Indiana.

1873. Poteriocrinites (Zeacrinus?) concinnus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 490, pl. 14, fig. 3.
Keokuk Group: Crawfordsville, Indiana.

### Woodocrinus coxanus Worthen.

1882. Zeacrinus cozanus. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 27. Upper Keokuk L. S.: Hamilton, Illinois.

1883. Zeacrinus Cozanus. Worthen, Gool. Surv. Ill., vol. 7, p. 302, pl. 28, fig. 1.
. Keokuk L. S.: Hamilton, Illinois.

### Woodocrinus elegans Hall.

1858. Zeacrimus elegans. Hall, Geol. Iowa, vol. 1, pt. 2, p. 547, pl. 9, figs. 1, 2. Burlington L. S.: Burlington, Iowa.

1894. Woodocrinus elegans. Keyes, Mo. Geol. Surv., vol. 4, p. 214, pl. 26, fig. 5. Lower Burlington L. S.: Louisiana, Missouri.

### Woodocrinus liliiformis Meek and Worthen.

1861. Poteriocrinus carinatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 139.

Burlington L. S.: Burlington, Iowa.

1868. Poteriocrinus carinatus. Meek and Worthen, Geol. Surv. Ill., vol. 3, p. 486, pl. 17, fig. 1.
 Burlington Group: Burlington, Iowa.

### Woodocrinus merope Hall.

1864. Zeacrinus merope. Hall, 17th Rep. N. Y. State Cab. Nat. Hist., p. 60. Waverly Group: Richfield, Ohio.

1875. Zeacrinus merope. Hall and Whitfield, Pal. Ohio, vol. 2, p. 178, pl. 12, fig. 18.
Waverly Group: Richfield, Ohio.

### Woodocrinus paternus Hall.

1864. Zeacrinus paternus. Hall, 17th Rep. N. Y. State Cab. Nat. Hist., p. 59. Waverly Group: Richfield, Ohio.

1875. Zeacrinus paternus. Hall and Whitfield, Pal. Ohio, vol. 2, p. 177, pl. 12, fig. 17.

Waverly Group: Richfield, Ohio.

# Woodocrinus perangulatus White.

1862. Zeacrinus perangulatus. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 11. Upper Burlington, L. S.: Burlington, Iowa.

### Woodocrinus planobrachiatus Meek and Worthen.

1860. Zeacrinus planobrachiatus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 391.

Keokuk L. S.: Monroe County, Illinois.

1866. Zeacrinus planobrachitus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 240, pl. 18, fig. 5.
Keokuk L. S.: South line of Monroe County, Illinois.

### Woodocrinus pocillum Miller.

1891. Zeacrinus pocilium. Miller, Bull. Geol. Surv. Mo., No. 4, p. 28, pl. 4, figs. 1, 2. Keokuk Group: Boonville, Missouri.

1894. Woodocrinus pocillum. Keyes, Mo. Geol. Surv., vol. 4, p. 214. Keokuk L. S.: Boonville, Missouri.

### Woodocrinus ramosus Hall.

1858. Zeaorinus ramosus. Hall, Geol. Iowa, vol. 1, pt. 2, p. 548, pl. 9, fig. 3. Burlington L. S.: Burlington, Iowa.

### Woodocrinus richfieldensis Worthen.

1882. Poteriocrinus richfieldensis. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 15.

Shaly S. S. of Kinderhook Group: Near Richfield, Ohio.

1883. Poteriocrinus Richfieldensis. Worthen, Geol. Surv. Ill., vol. 7, p. 285, pl. 30, fig. 5.

# Kinderhook Group: Near Richfield, Ohio. Woodocrinus scobins Meek and Worthen.

1869. Zeacrinus scobina. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 149.
Upper Burlington L. S.: Burlington, Iowa.

1873. Zeacrinus scobina. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 426, pl. 1, fig. 2.

Burlington L. S.: Burlington, Iowa.

### · Woodocrinus serratus Meek and Worthen.

1869. Zeacrinus serratus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 151. Burlington L. S.: Burlington, Iowa.

1873. Zeacrinus scrratus. Meek and Worthen, Geol. Surv. Ill., vol. 5, p. 428, pl. 1, fig. 6.

Burlington L. S.: Burlington, Iowa.

### Woodocrinus tentaculatus Worthen.

1882. Poteriocrinus tenuidactylus. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., • p. 10.

Upper shales of geode bed, Keokuk Group: 1 mile below Keokuk, Iowa.

1883. Poteriocrinus tentaculatus. Worthen, Geol. Surv. Ill., vol. 7, p. 277, pl. 28, fig. 11.

Keokuk Group (upper shales of geode bed): 1 mile below Keokuk, Iowa.

### Woodocrinus troostanus Meek and Worthen.

1860. Zeacrinus Troustanus. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 390. Burlington L. S.: Cedar Creek, Warren County, Illinois.

1861. Zeacrinus scoparius. Hall, Desc. New Spec. Crin., p. 8. Burlington L. S.

Zeacrinus scoparius. Hall, Jour. Bost. Soc. Nat. Hist., vol. 7, p. 305.
 Burlington L. S.: Burlington, Iowa.

Bull. 153-41

### Woodocrinus troostanus Meek and Worthen-Continued.

- 1862. Zeaorinus sacculus. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 12. Upper Burlington L. S.: Burlington, Iowa.
- 1862. Zeacrinus sacculus var. concinnus. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 13.

Upper Burlington L. S.: Burlington, Iowa.

1866. Zeacrinus Troostanus. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 186, pl. 16, fig. 2.

Burlington L. S.: Burlington, Iowa.

1893. Zeacrinus scoparius. Whitfield, Mem. Am. Mus. Nat. Hist., vol. 1, p. 34, pl. 3, figs. 19, 20.

Burlington L. S.: Burlington, Iowa.

# WORTHENOPORA Ulrich, 1890.

### Worthenpora spatulata Prout.

1859. Flustra spatulata. Prout, Trans. St. Louis Acad. Sci., vol. 1, p. 446, pl. 17, figs. 2-2c.

Second Archimedes L. S.: Barrett's Station, St. Louis County, Missouri.

1890. Worthenopora spatulata. Ulrich, Geol. Surv. Ill., vol. 8, p. 670, pl. 68, figs. 2, 2a.

Warsaw beds: Warsaw, Illinois; Barrett's Station, Missouri.

1894. Worthenopora spatulata. Keyes, Mo. Geol. Surv., vol. 5, p. 36. St. Louis L. S.: Barrett Station, Missouri.

### Worthenpora spinosa Ulrich.

1890. Worthenopora spinosa. Ulrich, Geol. Surv. Ill., vol. 8, p. 669, pl. 68, figs. 1-1g. Keokuk Group: Warsaw and Nauvoo, Illinois; Keokuk and Bentonsport, Iowa.

Warsaw beds: Warsaw, Illinois.

1894. Worthenopora spinosa. Keyes, Mo. Geol. Surv., vol. 5, p. 36.

Keokuk L. S.: Keokuk, Iowa.

### XYLOBIUS Dawson, 1860.

### Xylobius dawsoni Scudder.

1868. Xylobius dawsoni. Scudder, Dawson's Acad. Geol., p. 496. Carboniferous: Nova Scotia.

1873. Xylobius Dausoni. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 2, p. 235. Carboniferous: Nova Scotia.

1878. Xylobius Dawsoni. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 2, p. 561, fig. 4. Carboniferous: Joggins, Nova Scotia.

1878. Nylobius Dawsoni. Dawson, Supp. to Acad. Geol., p. 56, fig. 11d. Carboniferous: Nova Scotia.

1890. Xylobius Dawsoni. Scudder, Foss. Insc. N. A., vol. 1, p. 25; fig. 4, p. 31. Carboniferous: Joggins, Nova Scotia.

### Xylobius fractus Scudder.

1868 Xylobius fractus. Scudder, Dawson's Acad. Geol., p. 496. Carboniferous: Nova Scotia.

1873. Xylobius fractus. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 2, p. 234. Carboniferous: Nova Scotia.

1878. Xylobius fractus. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 2, p. 561, fig. 3. Carboniferous: Joggins, Nova Scotia.

1878. Xylobius fractus. Dawson, Supp. to Acad. Geol., p. 56, fig. 11c. Carboniferous: Nova Scotia.

1890. Nylohius fractus. Scudder, Foss. Insc. N. A., vol. 1, p. 24; fig. 3, p. 31. Carboniferous: Joggius, Nova Scotia.

### Xylobius frus.ulentus Scudder.

1890. Xylobius frustulentus. Soudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 438, pl. 37, figs. 4, 6.

Carboniferous: Mazon Creek, Illinois.

1890. Xylobius frustulentus. Scudder, Foss. Insc. N. A., vol. 1, p. 414, pl. 29, figs. 4, 6.

Carboniferous: Mazon Creek, Illinois.

# Xylobius mazonus Scudder.

1890. Xylobius mazonus. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 4, p. 439, pl. 37, figs. 7-11.

Carboniferous: Mazon Creek, Illinois.

1390. Xylobius mazonus. Scudder, Foss. Insc. N. A., vol. 1, p. 415, pl. 29, figs. 7-11. Carboniferous: Mazon Creek, Illinois.

# Xylobius sigillariæ Dawson.

1860. Xylobius Sigillariae. Dawson, Quart. Jour. Geol. Soc. Lond., vol. 16, p. 271, figs. 4-9.

Coal Formation: South Joggins, Nova Scotia.

\*1863. Xylobius Sigillariae. Dawson, Can. Nat. and Geol., vol. 8, p. 280, pl. 6, figs. 57-61.

Coal Formation: South Joggins, Nova Scotia.

1868. Xylobius sigillariae. Scudder, Am. Nat., vol. 1, p. 630, pl. 16, fig. 4.
Coal Measures: Nova Scotia.

1868. Xylobius Sigillariae. Dawson, Acad. Geol., p. 385, figs. 151a-c. Coal Measures: South Joggins, Nova Scotia.

1873. Xylobius sigillarias. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 2, pp. 232. Carboniferous: Nova Scotia.

1878. Xylobius sigillariae. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 2, p. 561, fig. 1. Carboniferous: Nova Scotia.

1890. Xylobius sigillariae. Scudder, Foss. Insc. N. A., vol. 1, p. 22; fig. 1, p. 31. Carboniferous: Nova Scotia.

### Xylobius similis Scudder.

1868. Xylobius similis. Scudder, Dawson's Acad. Geol., p. 496. Carboniferous: Nova Scotia.

1873. Xylobius similis. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 2, p. 233. Carboniferous: Nova Scotia.

1878. Xylobius similis. Scudder, Mem. Bost. Soc. Nat. Hist., vol. 2, p. 561, fig. 2. Carboniferous: Joggins, Nova Scotia.

1878. Xylobius similis. Dawson, Supp. to Acad. Geol., p. 56, fig. 11b. Carboniferous: Nova Scotia.

1890. Xylobius similis. Scudder, Foss. Insc. N. A., vol. 1, p. 23; fig. 2, p. 31. Carboniferous: Joggins, Nova Scotia.

# YOLDIA Muller, 1842.

# Yoldia carbonaria Meek.

\*1871. Yoldia (Palæoneilo?) carbonaria. Meek, Rep. Regents Univ. W. Va. Coal Measures: Monongahela County, West Virginia.

1875. Yoldia (Palæoneilof) carbonaria. Meek, Pal. Ohio, vol. 2, p. 336, pl. 19, fig. 5.
Coal Measures: Monongahela County, West Yirginia.

### Yoldia knoxensis McChesney.

1860. Leda polita. McChesney, Desc. New Pal. Foss., p. 53.
Coal Measures: Dr. E. Hall's Mill, Pope Creek, Knox County, Illinois.
(Name preoccupied.)

1865. Leda knoxensis. McChesney, Ill. New Spec. Foss., pl. 2, figs. 9 a-c.

# Yoldia knoxensis McChesney-Continued.

1868. Yoldia knoxensis. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 39, pl. 2, figs. 9a-c.

Coal Measures: Pope Creek, Knox County, Illinois.

# Yoldia levistriata Meek and Worthen.

1860. Leda (Yoldia?) levistriata. Meek and Worthen, Proc. Acad. Nat. Sci. Phil., p. 457.

St. Louis, L. S.: Waterloo, Monroe County, Illinois.

1866. Yoldia † levistriata. Meek and Worthen, Geol. Surv. Ill., vol. 2, p. 282, pl. 20, figs. 7a, b.

St. Louis Group: Waterloo, Monroe County, Illinois.

# Yoldia oweni McChesney.

1860. Leda oweni. McChesney, Desc. New Pal. Foss., p. 52.

Coal Measures: Mouth of Rush Creek, 5 miles below New Harmony, Indiana.

1865. Leda oweni. McChesney, Ill. New Spec. Foss., pl. 2, figs. 10 a-c.

1868. Yoldia? Oweni. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 38, pl. 2, figs. 10a-c.

Coal Measures: Mouth of Rush Creek, 5 miles below New Harmony, Indiana.

### Yoldia rushensis McChesney.

1860. Leda gibbosa. McChesney, Desc. New Pal. Fosc., p. 53.

Coal Measures: On Wabash River, 5 miles below New Harmony, Indiana. (Name preoccupied.)

1865. Leda rushensis. McChesney, Ill. New Spec. Foss., pl. 2, figs. 13 a-b.

1868. Yoldia rushensis. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 38, pl. 2, figs. 13a-c.

Coal Measures: On Wabash River, 5 miles below New Harmony, Indiana.

### Yoldia stevensoni Meek.

\*1871. Yoldia Stevensoni. Meek, Rep. Regents Univ. W. Va.

Coal Measures: Monongahela County, West Virginia.

1875. Yoldia Stevensoni. Meek, Pal. Ohio, vol. 2, p. 335, pl. 19, figs. 4a, b. Coal Measures: Monongahela County, West Virginia.

# Yoldia subscitula Meek and Hayden.

1858. Leda subscitula. Meek and Hayden, Trans. Albany Inst., vol. 4, p. 79. Permian: Kansas.

1864. Yoldia? subscitula. Meek and Hayden, Pal. Up. Mo., p. 60, pl. 2, figs. 4a, b. Permian: Near Mouth of Smoky Hill Fork of Kansas River and on Cotton-wood Creek, Kansas.

1866. Nucula (Leda) subscitula. Geinitz, Carb. und Dyas in Nebr., p. 22, tab. 1, fig. 35.

Nebraska City, Nebraska.

1872. Yoldia subscitula? Meek, U. S. Geol. Surv. Nebr., p. 205, pl. 10, fig. 10. Upper Coal Measures: Nebraska City, Nebraska.

1891. Yoldia? subscitula. White, Bull. U. S. Geol. Surv., No. 77, p. 27, pl. 4, fig. 4. Permian: Goodwin Creek, Baylor County, Texas.

1894. Yoldia subscitula. Keyes, Mo. Geol. Surv., vol. 5, p. 123.
Upper Coal Measures: Kansas City, Missouri.

# ZAPHRENTIS Rafinesque, 1820.

### Zaphrentis acuta White and Whitfield.

1862. Zaphrentis acutus. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 306.

Cheming Group: Burlington, Iowa.

### Zaphrentis acuta White and Whitfield-Continued.

- 1865. Zaphrentis acutus? Winchell, Proc. Acad. Nat. Sci. Phil., p. 111.
  - Lithographic L. S.: Clarksville, Missouri.
- 1894. Zaphrentis acuta. Keyes, Mo. Geol. Surv., vol. 4, p. 109, pl. 13, fig. 4. Kinderhook L. S.: Clarksville and Louisiana, Missouri.

### Zaphrentis calcariformis Hall.

- 1882. Zaphrentis calcariformis. Hall, 12th Rep. Geol. Surv. Ind., p. 293, pl. 21, figs. 10, 11.
  - Corniferous L. S.: Falls of the Ohio.
- 1884. Zaphrentis calcariformis. Hall, 35th Rep. N. Y. State Mus. Nat. Hist., p. 437. Corniferous L. S.: Falls of the Ohio.
- 1890. Zaphrentis calcariformis. Worthen, Geol. Surv. Ill., vol. 8, p. 74, pl. 10, figs. 2, 2a.
  - Warsaw L. S.: Colesburg, Kentucky. :

### Zaphrentis calceola White and Whitfield.

- 1862. Lophophyllum calceola. White and Whitfield, Proc. Bost. Soc. Nat. Hist., vol. 8, p. 305.
  Chemung Group: Burlington, Iowa.
- 1880. Zaphrentis calceola. White, Cont. to Inv. Pal., No. 8, p. 156, pl. 89, figs. 6a-d.
  Top of Chouteau L. S. and base of Burlington L. S.: Sedalia, Missouri.
- 1889. Zaphrentis calceola. Rowley, Am. Geol., vol. 3, p. 275.

  Upper Chouteau L. S.: Four miles east of Curryville, Missouri.

  Lower Burlington L. S.: Louisiana, Missouri.
- Upper Burlington L. S.: Two miles north of Curryville, Missouri.

  1894. Zaphrentis calceola. Keyes, Mo. Geol. Surv., vol. 4, p. 110.

  Kinderhook L. S.: Sedalia, Clarksville, Louisiana, and Hannibal, Missouri;

  Burlington, Iowa.

# Zaphrentis calyculus Miller.

- 1891. Zaphrentis calyculus. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 10, pl. 1, figs. 13, 14.
  - Chouteau L. S.: Near Sedalia, Missouri.
- 1892. Zaphrentis calyoulus. Miller, 17th Rep. Geol. Surv. Ind., p. 620, pl. 1, figs. 13, 14.
  - Chouteau L. S.: Near Sedalia, Missouri.

### Zaphrentis cannonensis Winchell.

1869. Zaphrentis Cannonensis. Winchell, Safford's Geol. Tenn., p. 442.
Immediately above Black Shale: Manchester, Cannon County, Tennessee.

### Zaphrentis carinatus Worthen.

1890. Zaphrentis carinatus. Worthen, Geol. Surv. Ill., vol. 8, p. 75, pl. 10, figs. 3, 3a. Keokuk or St. Louis L. S.: Bentonsport, Iowa.

# Zaphrentis cassedayi Milne-Edwards.

1860. Zaphrentis Cassedayi. Milne-Edwards, Hist. Nat. Corr., vol. 3, p. 341, pl. G1, fig. 2.

Carboniferous: Spergen Hill, Indiana.

# Zaphrentis centralis Milne-Edwards and Haime.

- Zaphrentis centralis. Milne-Edwards and Haime, Monog. des Polyp. Foss.,
   p. 328, pl. 3, fig. 6.
  - Carboniferous: Hills near Louisville, Kentucky.
- 1860. Zaphrentis centralis. Milne-Edwards, Hist. Nat. Corr., vol. 3, p. 336. Carboniferous: Near Louisville, Kentucky.
- 1890. Zaphrentis centralis. Worthen, Geol. Surv. Ill., vol. 8, p. 72, pl. 9, figs. 1, 1a; pl. 10, figs. 13, 13a.
  - Keokuk L. S.: Warsaw and near Plymouth, Illinois.

# Zaphrentis centralis Milne-Edwards and Haime-Continued.

1894. Zaphrentis centralis. Keyes, Mo. Geol. Surv., vol. 4, p. 112.

Burlington L. S.: Louisiana, Hannibal, Helton, Ash Grove, Springfield, Sedalia, and Ste. Genevieve, Missouri.

Keokuk L. S.: Lagrange and St. Francisville, Missouri; Keokuk and Bonaparte, Iowa; Warsaw, Illinois.

### Zaphrentis chesterensis Worthen.

1890. Zaphrentis chesterensis. Worthen, Geol. Surv. Ill., vol. 8, p. 73, pl. 9, figs. 3, 3a.

Chester L. S.: Monroe and Randolph counties, Illinois.

1894. Zaphrentis chesterensis. Keyes, Mo. Geol. Surv., vol. 4, p. 115. Kaskaskia L. S.: Ste. Genevieve, Missonri.

### Zaphrentis chouteauensis Miller.

1891. Zaphrentis chouteauensis. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 10, pl. 1, figs. 11, 12.

Chouteau L. S.: Near Sedalia, Missouri.

1892. Zaphrentis chouteauensis. Miller, 17th Rep. Geol. Surv. Ind., p. 620, pl. 1, figs. 11, 12.

Chouteau L. S.: Near Sedalia, Missouri.

1894. Zaphrentis chouteauensis. Keyes, Mo. Geol. Surv., vol. 4, p. 112. Chouteau L. S.: Sedalia, Missouri.

### Zaphrentis cliffordana Milne-Edwards and Haime.

1851. Zaphrentis cliffordana. Milne-Edwards and Haime, Monog. des Polyp. Foss., p. 329, pl. 3, fig. 5.

Carboniferous: Buttonmould Knobs, near Louisville; Mammoth Cave and Grayson County, Kentucky.

1860. Zaphrentis Cliffordana. Milne-Edwards, Hist. Nat. Corr., vol. 3, p. 337. Carboniferous: Kentucky.

1890. Zaphrentis cliffordana. Worthen, Geol. Surv. Ill., vol. 8, p. 75, pl. 10, figs. 1, 1b.

Kinderhook Group: Monroe County, Illinois.

1891. Zaphrentis Cliffordana. Whitfield, Ann. N. Y. Acad. Sci., vol. 5, p. 576, pl. 13, figs. 1-3.

Maxville L. S.: Maxville and Newtonville, Ohio.

1895. Zaphrentis Cliffordana. Whitfield, Geol. Surv. Ohio, vol. 7, p. 465, pl. 9, figs. 1-3.

Maxville L. S.: Maxville and Newtonville, Ohio.

### Zaphrentis compressa Milne-Edwards.

1860. Zaphrentis compressa. Milne-Edwards, Hist. Nat. Corr., vol. 3, p. 342, pl. G1, figs. 3, 4.

Carboniferous: Spergen Hill, Indiana.

# Zaphrentis cylindraceus Worthen.

1890. Zaphrentis cylindraccus. Worthen, Geol. Surv. Ill., vol. 8, p. 78, pl. 9, figs. 5, 5a

Chester L. S.. Chester, Illinois.

1894. Zaphrentis cylindracea. Keyes, Mo. Geol. Surv.. vol. 4, p. 111, pl. 13, fig. 5. Kaskaskia L. S.: Ste. Genevieve, Missouri; Chester, Illinois.

# Zaphrentis cylindrica Milne-Edwards and Haime.

1858. Zaphrentis cylindrica. Marcou, Geol. N. A., p. 53, pl. 8, fig. 8.

Mountain Limestone: Sierre de Sandia and Tigeras, New Mexico.

### Zaphrentis dalei Milne-Edwards and Haime.

1851. Zaphrentis dalii. Milne-Edwards and Haime, Monog. des Polyp. Foss., p. 329.

Carboniferous: Warsaw, Illinois.

### Zaphrentis dalei Milne-Edwards and Haime-Continued.

- 1852. Cyathophyllum (fungites?). Owen, Geol. Rep. Wis., lows., and Minn., tab. 4, fig. 4.
  - Carboniferous L. S.: Keokuk Rapids of the Mississippi.
- 1858. Zaphrentis spinulifera. Hall, Geol. Iowa, vol. 1, pt. 2, p. 650, pl. 22, figs. 1a, b.
  - Warsaw L. S.: Warsaw, Illinois.
- 1860. Zaphrentis Dalii. Milne-Edwards, Hist. Nat. Corr., vol. 3, p. 337. Carboniferous: Illinois.
- 1873. Zaphrentis spinulifera. White, Am. Jour. Sci. (3), vol. 5, p. 72. St. Louis L. S.: Marion County, Iowa.
- 1890. Zaphrentis dalei. Worthen, Geol. Surv. Ill., vol. 8, p. 71, pl. 10, figs. 12, 12a. Warsaw L. S.: Warsaw, Illinois.
- 1894. Zaphrentis dalei. Keyes, Mo. Geol. Surv., vol. 4, p. 113, pl. 13, fig. 12.
  Keokuk L. S. and Shale: St. Francisville, Boonville, and Canton, Missouri.
  Burlington L. S.: Hannibal, Louisiana, and Springfield, Missouri.

# Zaphrentis declinis Miller.

- 1891. Zaphrentis declinis. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 12, pl. 1, figs. 25, 26.
  - Keokuk Group: New Providence, Indiana.
- 1892. Zaphrentis declinis. Miller, 17th Rep. Geol. Surv. Ind., p. 622, pl. 1, figs. 25, 26.
  Keokuk Group: New Providence, Indiana.

# Zaphrentis elliptica White.

- 1862. Zaphrentis elliptica. White, Proc. Bost. Soc. Nat. Hist., vol. 9, p. 31. Lower Burlington L. S.: Burlington, Iowa.
- 1880. Zaphrentis elliptica. White, Cont. to Inv. Pal. No. 8, p. 155, pl. 39, figs. 4a, b. Burlington L. S.: Burlington, Iowa.
- 1894. Zaphrentis elliptica. Keyes, Mo. Geol. Surv., vol. 4, p. 111, pl. 13, figs. 6a, b. Burlington L. S.: Louisiana, Missouri; Kinderhook, Illinois; Bonaparte, Iowa.

### Zaphrentis excentrica Meek.

- 1873. Zaphrentis excentrica. Meek, U. S. Geol. Surv. Mont., Idaho, Wyo., and Utah, p. 468.
  Carboniferous: "Old Baldy," near Virginia City, Montana.
- 1877. Zaphrentis excentrica. Meek, U. S. Geol. Surv. Expl. 40 Par., vol. 4, p. 52, pl. 4, figs. 1-1d.
  - Carboniferous L. S.: Boxelder Peak, Wasatch range, Utah.
- 1877. Zaphrentis excentrica. White, U. S. Geog. Surv. W. 100 Merid., vol. 4, p. 101, pl. 6, fig. 3a.
  - Carboniferous: Fossil Hill, White Pine County, Nevada.

# Zaphrentis exigua Miller.

- 1891. Zaphrentis exigua. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 11, pl. 1, figs. 19, 20.
  - Chouteau L. S.: Near Sedalia, Missouri.
- 1892. Zaphrentis exigua. Miller, 17th Rep. Geol. Surv. Ind., p. 621, pl. 1, figs. 19, 20. Chouteau L. S.: Near Sedalia, Missouri.
- 1894. Zaphrentis erigua. Keyes, Mo. Geol. Surv., vol. 4, p. 112. Chouteau L. S.: Sedalia, Missouri.

### Zaphrentis gibsoni White.

- 1884. Zaphrentis Gibsoni. White, 13th Rep. Geol. Surv. Ind., p. 117, pl. 23, figs. 4, 5. Coal Measures: Vermilion County, Indiana.
- Zaphrentis glans. See Hadrophyllum glans.

### Zaphrentis ida Winchell.

1865. Zaphrentis Ida. Winchell, Proc. Acad. Nat. Sci. Phil., p. 111.

Goniatite L. S.: Rockford, Indiana.

1869. Zaphrentis Ida? Winchell, Safford's Geol. Tenn., p. 444.
Shales just above Black Shale: Hickman and Maury counties, Tennessee.

1870. Zaphrentis Ida † Winchell, Proc. Am. Phil. Soc., vol. 11, p. 247.

# Waverly Group: Hickman County, Tennessee; Sciotoville, Ohio.

### Zaphrentis illinoisensis Worthen.

1890. Zaphrentis illinoiensis. Worthen, Geol. Surv. Ill., vol. 8, p. 77, pl. 9, figs. 4, 4a.

Keokuk L. S.: Warsaw and near Plymouth, Illinois.

1894. Zaphrentis illinoisensis. Keyes, Mo. Geol. Surv., vol. 4, p. 113.

Keokuk L. S.: Wayland, Missouri; Warsaw, Illinois; Keokuk and Bonaparte, Iowa.

### Zaphrentis lanceolata Worthen.

1890. Zaphrentis lanceolatus. Worthen, Geol. Surv. Ill., vol. 8, p. 76, pl. 10, figs. 4, 4a.

Warsaw L. S.: Spergen Hill, Indiana; Colesburg, Kentucky.

### Zaphrentis minas Dawson.

1868. Zaphrentis Minas. Dawson, Acad. Geol., p. 286, fig. 84a. Carboniferous L. S.: Kennetcook, Nova Scotia.

### Zaphrentis multilamella Hall.

1852. Faprentis? multilamella. Hall. Stansb. Exped. Gt. Salt Lake, p. 408, pl. 1, fig. 2.

Carboniferous: Cloth Cap and Flat Rock, Great Salt Lake, Utah.

1877. Zaphrentis † (Clisiophyllum †) multilamella. Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 53, pl. 6, figs. 4-4b.

Carboniferous L. S.: Strong's Knob, on an island in Great Salt Lake, Utah

### Zaphrentis ovidos Salter.

1855. Zaphrentis Ovidos. Salter, Belcher's "Last of the Arctic Voyages," p. 382, pl. 36, fig. 5.

# Carboniferous: Depot Point.

Zaphrentis parasitica Worthen.

1890. Zaphrentis parasitica. Worthen, Geol. Surv. Ill., vol. 8, p. 79, pl. 10, figs. 5, 5a.

Kinderhook Group: Clarksville, Missouri.

### Zaphrentis pellænsis Worthen.

1890. Zaphrentis pellaensis. Worthen, Geol. Surv. Ill., vol. 8, p. 74, pl. 9, figs. 6, 6a; pl. 10, figs. 11, 11a.

St. Louis Shales: Near Pella, Iowa.

#### Zaphrentis prona Milne-Edwards.

1860. Zaphrentis pronu. Milne-Edwards, Hist. Nat. Corr., vol. 3, p. 342. Carboniferous: Spergen Hill, Indiana.

#### Zaphrentis reversa Worthen.

1890. Zaphrentis reversa. Worthen, Geol. Surv. Ill., vol. 8, p. 78.
Warsaw L. S.: Near Columbia, Mouroe County, Illinois.

#### Zaphrentis spergenensis Worthen.

1890. Zaphrentis spergenensis. Worthen, Geol. Surv. Ill., vol. 8, p. 77, pl. 10, figs. 8, 8a.

Warsaw L. S.: Spergen Hill, Indiana; Warsaw, Illinois.

1894. Zaphrentis spergenensis. Keyes, Mo. Geol. Surv., vol. 4, p. 115.

Keokuk L. S.: Wayland and Boonville, Missouri; Keokuk, Iowa; Warsaw, Illinois.

Zaphrentis spinulifera. See Zaphrentis dalei.

### Zaphrentis spinulosa Milne-Edwards and Haime.

- 1851. Zaphrentis spinulosa. Milne-Edwards and Haime, Monog. des Blyp. Foss., p. 334, pl. 5, figs. 7, 7a.
  - Carboniferous: Chester and Kaskaskia, Illinois.
- 1860. Zaphrentis spinulosa. Milne-Edwards, Hist. Nat. Corr., vol. 3, p. 340, pl. 5, figs. 7, 7a.
  Carboniferous: Illinois.
- 1876. Zaphrentis spinulosa (?) Rominger, Geol. Surv. Mich., vol. 3, pt. 2, p. 152, pl. 54, 5 figures.
  - Carboniferous L. S.: Saginaw Bay, Point aux Grees and on Charity Islands, Michigan.
- 1890. Zaphrentis spinulosa. Worthen, Geol. Surv. Ill., vol. 8, p. 73, pl. 10, figs. 6, 6a.

Chester L. S.: Chester, Illinois.

- 1894. Zaphrentis spinulosa. Keyes, Mo. Geol. Surv., vol. 4, p. 114.
  - Keokuk L. S.: Curryville, St. Francisville, and Boonville, Missouri; Keokuk, Iowa.
  - St. Louis L. S.: Clark County and St. Louis County, Missouri; Fort Dodge, Pella, Fairfield, and Mount Pleasant, Iowa.
    Kaskaskia L. S.: Ste. Genevieve, Missouri.

### Zaphrentis stansburyi Hall.

- 1852. Faphrentis stansburyii. Hall, Stansb. Exped. Gt. Salt Lake, p. 408, pl. 1, figs. 3a, b.
  - Carboniferous: Stansbury's Island, Cloth Cap, and Flat Rock Point, Great Salt Lake, Utah.
- 1858. Zaphrentis stansburyi. Marcou, Geol. N. A., p. 52, pl. 7, fig. 7.
  Mountain L. 8.: Tigeras, Pecos Village, and Sierra de Sandia, New Mexico.
- 1860. Zaphrentis Stansburyi. Milne-Edwards, Hist. Nat. Corr., vol. 3, p. 347. Carboniferous: Great Salt Lake.
- 1877. Zaphrentis ? Stansburyii ? Meek, U. S. Geol. Expl. 40 Par., vol. 4, p. 54, pl. 6, figs. 3-3c.
  - Carboniferous L. S.: Boxelder and Logan's peaks, Wasatch range. Divide between Ross Fork and Lincoln Valley, Idaho.

### Zaphrentis tantilla Miller.

- 1891. Zaphrentis tantilla. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 11, pl. 1, figs. 23, 24.
  - Chouteau L. S.: Near Sedalia, Missouri.
- 1892. Zaphrentis tantilla. Miller, 17th Rep.Geol. Surv. Ind.,p. 621, pl. 1, figs. 23, 24. Chouteau L. S.: Near Sedalia, Missouri.
- 1894. Zaphrentis tantilla. Keyes, Mo. Geol. Surv., vol. 4, p. 111. Kinderhook L. S.: Sedalia, Missouri. Burlington L. S.: Louisiana and Hannibal, Missouri.

### Zaphrentis tenella Miller.

- 1891. Zaphrentis tenella. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 11, pl. 1, figs. 17, 18.
  Chouteau L. S.: Near Sedalia, Missouri.
- 1892. Zaphrentis tenella. Miller, 17th Rep. Geol. Surv. Ind., p. 621, pl. i, figs. 17, 18. Chouteau L. S.: Near Sedalia, Missouri.
- 1894. Zaphrentis tenella. Keyes, Mo. Geol. Surv., vol. 4, p. 111, pl. 13, fig. 10. Kinderhook L. S.: Sedalia and Louisiana, Missouri.

#### Zaphrentis ulrichi Worthen.

1890. Zaphrentis ulrichi. Worthen, Geol. Surv. Ill., vol. 8, p. 76, pl. 10, figs. 10, 10a. Warsaw L. S.: Colesburg, Kentucky.

### Zaphrentis varsoviensis Worthen.

1890. Zaphrentis rarsoriensis. Worthen, Geol. Surv. Ill., vol. 8, p. 78, pl. 10, figs. 9, 9a.

Keokuk L. S.: Warsaw, Hamilton, and Nauvoo, Illinois; Keokuk, Iowa.

1894. Zaphrentis varsarensis. Keyes, Mo. Geol. Surv., vol. 4, p. 114. Keokuk L. S.: La Grange, Missouri; Warsaw, Ill.

## Zaphrentis (undetermined species).

1877. Zaphrentis — (f) Whiteaves, Geol. Surv. Can. Rep. of Prog. 1875-76, p. 98.

Devonian or Carboniferous: Fossil Point, Peace River, Canada.

1887. Zaphrentis sp. Herrick, Bull. Den. Univ., vol. 2, p. 50, pl. 2, fig. 21. Coal Measures: Flint Ridge, Ohio.

1888. Zaphrentis (†) Herrick, Bull. Den. Univ., vol. 4, pl. 8, fig. 6.
Waverly Group: Rushville, Ohio.

1895. Zaphrentis? Herrick, Geol. Surv. Ohio, vol. 7, pl. 19, fig. 6. Burlington or Keokuk: Rushville, Ohio.

1897. Zaphrentis sp. indet. Smith, Proc. Am. Phil. Soc., vol. 35, p. 25.

Lower Coal Measures: Crawford and Conway counties, Arkansas.

### ZAPTYCHIUS Walcott, 1884.

### Zaptychius carbonaria Walcott.

1883. Zaptychius carbonaria. Walcott, Science, vol. 2, p. 808, fig. 1. Base of Carboniferous: Eureka District, Nevada.

1884. Zaptychius carbonaria. Walcott, Pal. Eureka District, p. 263, fig. 7.

Lower Carboniferous: Eureka District, Nevada.

## ZEACRINUS Troost, 1850.

Zeaerinus acanthophorus. See Hydreionocrinus acanthophorus.

Zeacrinus arboreus. See Woodocrinus arboreus.

Zeacrinus armiger. See Hydreionocrinus armiger.

Zeacrinus asper. See Woodocrinus asper.

### Zeacrinus bellulus Miller and Gurley.

1894. Zeacrinus bellulus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 34, pl. 3, fig. 8.

Kaskaskia Group: Near Shoals, Martin County, Indiana.

### Zeacrinus bifurcatus McChesney.

1860. Zeacrinus bifurcatus. McChesney, Desc. New Pal. Foss, p. 9. Kaskaskia L. S.: Kaskaskia, Illinois.

1865. Zeacrinus bifurcatus. McChesney, Ill. New Spec. Foss., pl. 5, fig. 3.

1868. Zeacrinus bifurcatus. McChesney, Trans. Chicago Acad. Sci., vol. 1, p. 6, pl. 5, fig. 3.

Chester L. S.: Kaskaskia, Illinois.

### Zeacrinus blairi Miller and Gurley.

1895. Zeacrinus blairi. Miller and Gurley, Bull. No. 7, Ill. State Mus. Nat. Hist., p. 66, pl. 4, figs. 5, 6.

Zeacrinus cariniferus. See Coeliocrinus cariniferus.

### Zeacrinus commaticus Miller.

1891. Zeacrinus commaticus. Miller, Bull. Geol. Surv. Mo., No. 4, p. 36, pl. 5, figs. 10, 11.

Keokuk Group: Boonville, Missouri.

1891. Zeacrinus commaticus. Miller, Adv. Sheets, 17th Rep. Geol. Surv. Ind., p. 44, pl. 8, fig. 8.

Keokuk Group: Boonville, Mis ouri.

### Zeacrinus compactilis Worthen.

1873. Zeacrinus compactilis. Worthen, Geol. Surv. Ill., vol. 5, p. 536, pl. 21, fig. 5.

Lower Carboniferous: Cumberland County, Kentucky.

Zeacrinus coxanus. See Woodocrinus coxanus.

Zeacrinus crassus. See Eupachycrinus crassus.

### Zeacrinus cylindricus Miller and Gurley.

1894. Zeacrinus cylindricus. Miller and Gurley, Bull. No. 5, Ill. State Mus. Nat. Hist., p. 38, pl. 3, figs. 19-21.

Kaskaskia Group: Pulaski County, Kentucky.

Zeacrinus depressus. See Hydreionocrinus depressus.

Zeacrinus discus. See Hydreionocrinus discus.

### Zeacrinus doverensis Miller and Gurley.

1896. Zeacrinus doverensis. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 35, pl. 2, figs. 20-22.

Kaskaskia Group: Dover Hill, Indiana.

## Zeacrinus dubius Miller and Gurley.

1890. Zeacrinus dubius. Miller and Gurley, 16th Rep. Geol. Surv. Ind., p. 361, pl. 7, figs. 7, 8.

Keokuk Group: Bono, Indiana.

## Zeacrinus durabilis Miller and Gurley.

1895. Zeacrinus durabilis. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 48, pl. 4, figs. 14-15.

Kaskaskia Group: Pulaski County, Kentucky.

Zeacrinus elegans. See Woodocrinus elegans.

## Zeacrinus faggi Rowley and Hare.

1891. Zeacrinus faggi. Rowley and Hare. The Kansas City Scientist, vol. 5, p. 103, pl. 2, fig. 20.

Upper Burlington L. S.: Spencer Creek, 2 miles north of Curryville,

#### Zeacrinus florealis Yandell and Shumard.

1847. Cyathocrinus florialis. Yandell and Shumard, Cont. to Geol. of Ky., p. 24, pl., fig. 1.
Grayson, Kentucky.

Zeacrinus formosus. See Eupachycrinus formosus.

### Zeacrinus grandiculus Miller and Gurley.

1894. Zeacrinus grandiculus. Miller and Gurley, Bull. No. 5, Ill. State Mus. Nat. Hist., p. 32, pl. 2, figs. 31, 32.

Kaskaskia Group: Bowling Green, Kentucky.

#### Zeacrinus intermedius Hall.

1858. Zeacrinus intermedius. Hall, Geol. Iowa, vol. 1, pt. 2, p. 681, pl. 25, fig. 4. Kaskaskia L. S.: Chester, Illinois.

1882. Zeacrinus intermedius. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 17 (footnote).
St. Louis L. S. (not Chester, as reported by Hall).

## Zeacrinus kentuckiensis Miller and Gurley.

1896. Zeacrinus kentuckiensis. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 37, pl. 2, figs. 23, 24.

Kaskaskia Group: Pulaski County, Kentucky.

#### Zeacrinus keokuk Worthen.

1882. Zeacrinus keokuk. Worthen, Bull. No. 1, Ill. State Mus. Nat. Hist., p. 28.
Upper part of geodiferous shales of Keokuk Group: One mile below Keokuk, Iowa.

1883. Zeacrinus Keokuk. Worthen, Geol. Surv. Ill., vol. 7, p. 303, pl. 28, fig. 3.

Keokuk Group (upper part of geode bed): One mile below Keokuk, Iowa.

Zeacrinus lyra. See Cœliocrinus lyra.

## Zeacrinus magnoliaeformis Owen and Norwood.

\*1846. Cyathocrinus magnoliaeformis. Owen and Norwood, Researches Carb. Rocks, Kentucky.

1858. Zeacrinus magnoliæformis. Hall, Geol. Iowa, vol. 1, pt. 2, pp. 544 and 684. Kaskaskia L. S.: Tennessee.

1894. Zeacrinus magnoliæformis. Keyes, Mo. Geol. Surv., vol. 4, p. 214 Kaskaskia L. S.: Chester, Illinois.

Zeacrinus maniformis. See Eupachycrinus maniformis.

Zeacrinus merope. See Woodocrinus merope.

Zeacrinus mooresi. See Eupachycrinus mooresi.

Zeacrinus mucrospinus. See Hydreionocrinus mucrospinus.

### Zeacrinus nitidus Miller and Gurley.

1894. Zeacrinus mitidus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 36, pl. 6, figs. 3, 4. Kaskaskia Group: Randolph County, Illinois.

### Zeacrinus nodosus Wachsmuth and Springer.

1886. Zeacrinus nodosus. Wachsmuth and Springer, Proc. Acad. Nat. Sci. Phil., p. 167. (Rev. Palaeocr. III, p. 243, pl. 6, fig. 9, and pl. 9, fig. 3.) Keokuk L. S.: White's Creek Springs, Tennessee.

### Zeacrinus obesus Miller and Gurley.

1894. Zeacrinus obesus. Miller and Gurley, Bull. No. 3, Ill. State Mus. Nat. Hist., p. 35, pl. 4, figs. 6-8.

Kaskaskia Group: Flag Pond, Virginia.

### Zeacrinus ovalis Lyon and Casseday.

1860. Zeacrinus oralis. Lyon and Casseday, Am. Jour. Sci. (2), vol. 29, p. 71. Third L. S. of Millstone Grit Series: Grayson, Breckenridge, Edmonson, and Todd counties, Kentucky.

Zeacrinus paternus. See Woodocrinus paternus.

### Zeacrinus peculiaris Miller and Gurley.

1896. Zeacrinus peculiaris. Miller and Gurley, Bull. No. 8, Ill. State Mus. Nat. Hist., p. 34, pl. 2, figs. 17-19.

Kaskaskia Group: Pulaski County, Kentucky.

Zeacrinus perangulatus. See Woodocrinus perangulatus.

Zeacrinus pikensis. See Scaphiocrinus pikensis.

Zeacrinus planobrachiatus. See Woodocrinus planobrachiatus.

Zeacrinus pocillum. See Woodocrinus pocillum.

### Zeacrinus pulaskiensis Miller and Gurley.

1895. Zeacrinus pulaskiensis. Miller and Gurley, Bull. No. 6, Ill. State Mus. Nat. Hist., p. 47, pl. 4, figs. 12, 13.

Kaskaskia Group: Pulaski County, Kentucky.

Zeacrinus ramosus. See Woodocrinus ramosus.

Zeacrinus sacculus. See Woodocrinus troostanus.

Zeacrinus sacculus var. concinnus. See Woodocrinus troostanus.

## Zeacrinus salemensis Miller and Gurley.

1894. Zeacrinus salemensis. Miller and Gurley, Bull. No. 5, Ill. State Mus. Nat. Hist., p. 37, pl. 3, fig. 17. Kookuk Group: Salem, Indiana.

Zeacrinus scobina. See Woodocrinus scobina.

Zeacrinus scoparius. See Woodocrinus troostanus.

Zeacrinus serratus. See Woodocrinus serratus.

### Zeacrinus spinuliferus Worthen.

1890. Poteriocrinus spinuliferus. Worthen, Geol. Surv. Ill., vol. 8, p. 90, pl. 17, figs. l, 1a.

Chester L. S., Monroe County, Illinois.

Zeacrinus stimpsoni. See Decadocrinus stimpsoni.

Zeacrinus subtumidus. See Eupachycrinus subtumidus.

Zeacrinus troostanus. See Woodocrinus troostanus.

#### Zeacrinus wortheni Hall.

1858. Zeacrinus wortheni. Hall, Geol. Iowa, vol. 1, pt. 2, p. 683. Kaskaskia L. S.: Chester, Illinois.

### Zeacrinus (species undetermined).

1873. Zeacrinus (sp. undet.). Meek and Worthen, Geol. Surv. Ill., vol. 5, pl. 1, fig. 4.
Burlington Group.

## ZONITES Montfort, 1810.

### Zonites priscus Carpenter.

1867. Zonites (Conulus) priscus. Carpenter, Quart. Jour. Geol. Soc. Lond., vol. 23, p. 331, figs. a-e.

Coal Formation: South Joggins, Nova Scotia.

1868. Zonites (Conulus) priscus. Dawson, Acad. Geol., p. 385, figs. 150a, b. Coal Measures: Joggins, Nova Scotia.

1880. Zonites (Conulus) priscus. Dawson, Am. Jour. Sci. (3), vol. 20, p. 411, figs. 10, 11, 14d.
 Coal Measures: South Joggins, Nova Scotia.

1883. Zonites prisons. White, 3d Am. Rep. U. S. Geol. Surv., p. 453, pl. 2, figs. 11, 12.

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[Bulletin 153.]

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